November 1984

An independent magazine published by EMAP Publications

sinclair user

Issue No 32

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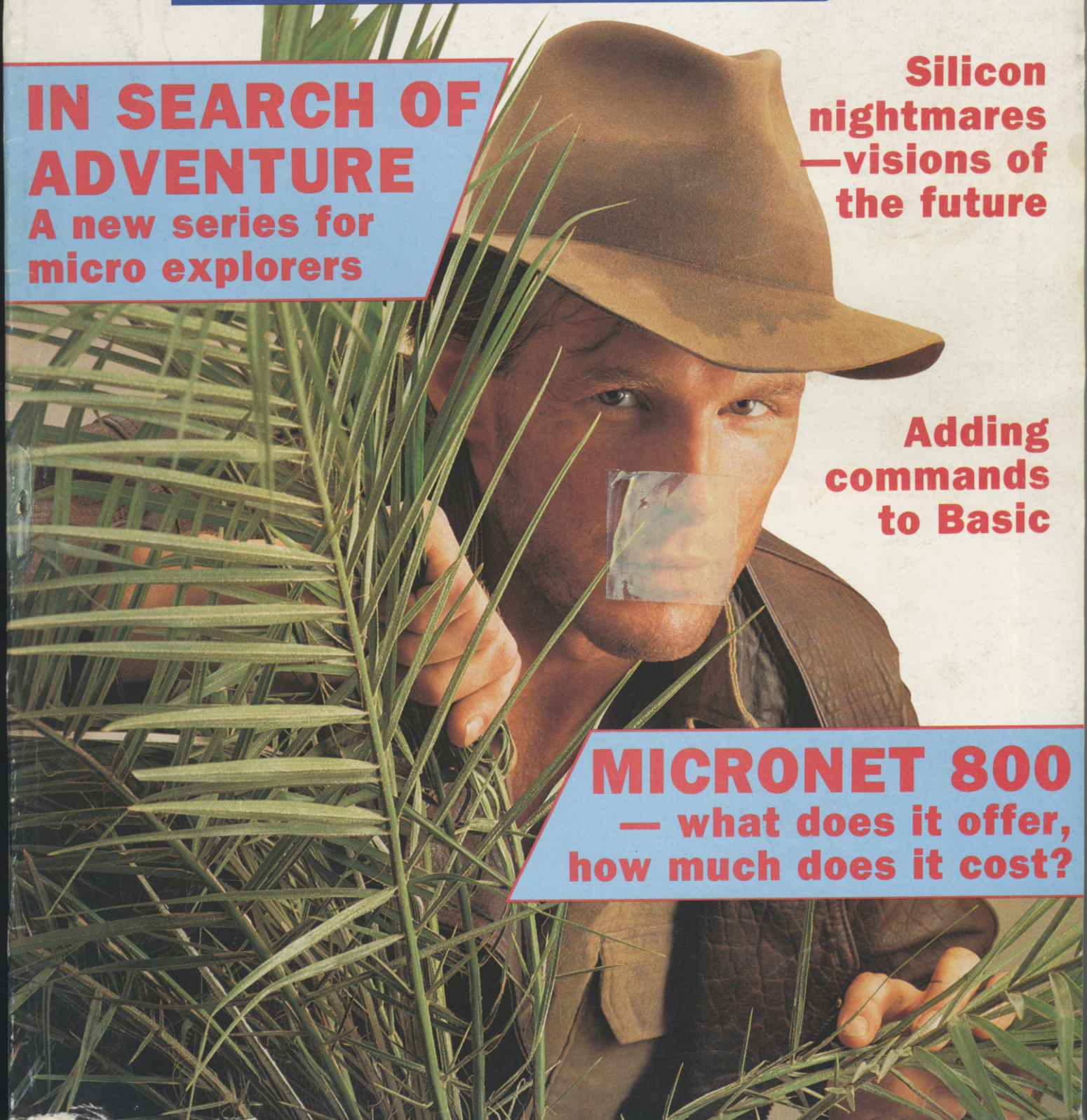

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Silicon nightmares —visions of the future

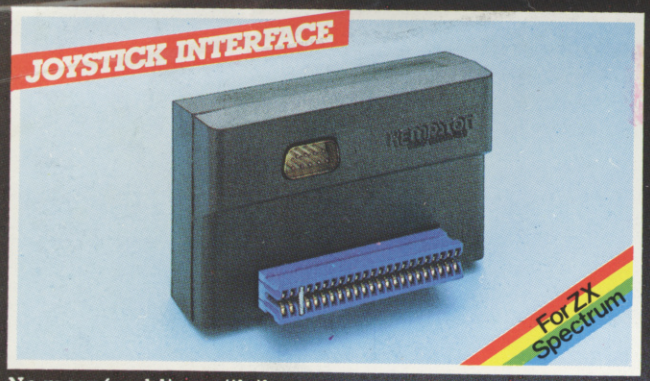
Adding commands to Basic

MICRONET 800

— what does it offer, how much does it cost?

Peripheral perfection

JOYSTICK INTERFACE



No more fumbling with the game control keys, now you can have joystick control on the ZX Spectrum. The Kempston joystick interface allows all joysticks in the Kempston range (and others that are Atari compatible) to be used with the Spectrum. Simply plugs into the edge connector.
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NEW

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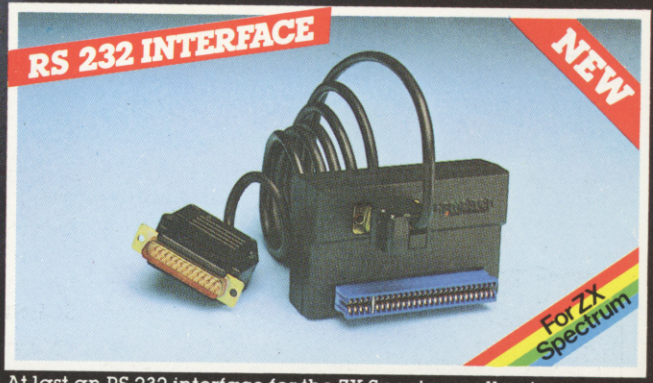
Commodore and Atari compatible. See joystick interface for Spectrum compatibility. **ONLY £12.75**

RS 232 INTERFACE

NEW



At last an RS 232 interface for the ZX Spectrum allowing connection to any printer which follows the RS 232 protocol. The interface has its own EPROM allowing the use of keywords LLIST, LPRINT and COPY. We recommend the Brother EP44 Printer for use with this interface.
Interface complete with cable and connector **ONLY £45.00**

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***Sinclair User* is published monthly by EMAP Business & Computer Publications**

ABC MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS
96,271
Jan-June 1984

Telephone
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01-430 1200
If you would like to contribute to *Sinclair User* please send programs or articles to:
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Sinclair User

ISSN No 0262-5458
Printed and typeset by
Cradley Print PLC,
Warley,
West Midlands
Distributed by
Spotlight Magazine Distribution Ltd,
1 Benwell Road,
Holloway, London N7
01-607 6411

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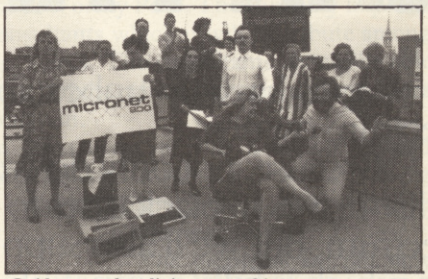

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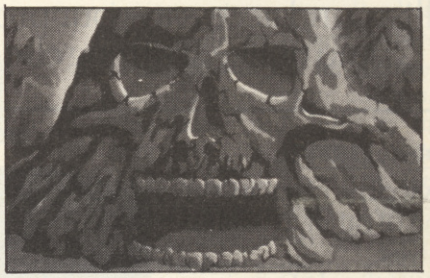
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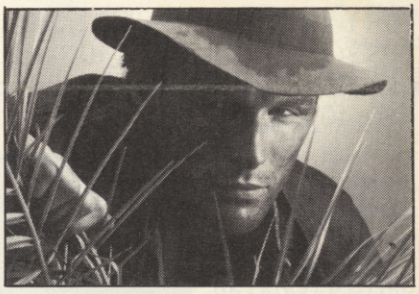
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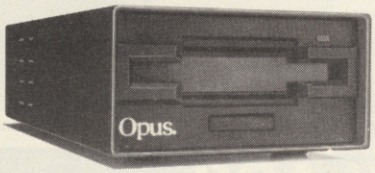

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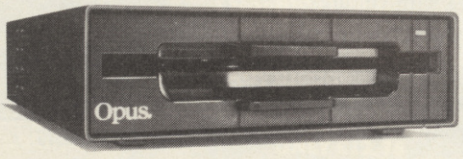

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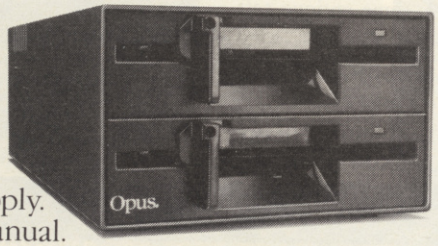

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THE TERMINAL SOLUTION

IT SEEMS that almost every day another major chain of high street stores enters the computer market. The latest of these is Marks and Spencer, renowned for its lines of durable Y-fronts and sensible sweaters. The more outlets there are for micro products, the better it is for the user, or so the argument goes. There is, however, dissatisfaction amongst consumers and manufacturers with the service provided by the main street middlemen.

The trade paper *Home Computer Trade Weekly* recently conducted a spot survey of seven retail chains and the signs are not encouraging.

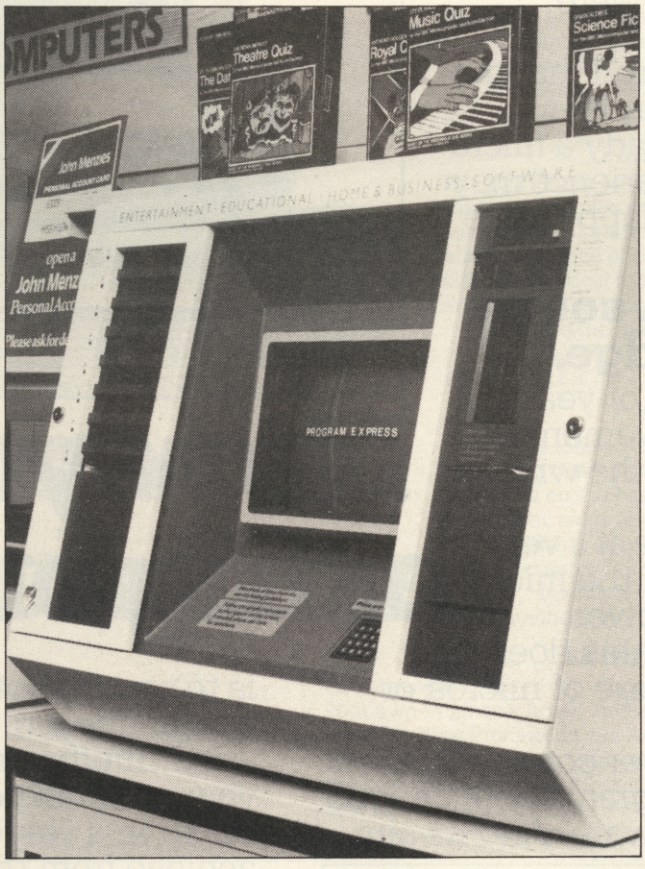
It is no surprise that top of the pops is WH Smith which gets good ratings for floor space, trained staff, software range and layout. It does not, however, score highly where new products are concerned, and that is a fault with all retailers who stock old ranges until they have been cleared off the shelves. Both customer and software house suffers as a result because new products are not generally available. It is not surprising that publishers have complained of disastrous sales this summer when shop shelves are stocked with dusty copies of **Maziacs** and **Mad Martha.**

The amount of shelf space is itself a problem and one which is tied in with floor space given to a computer department. Again WH Smith comes top and Rumbelows comes bottom in the CTW report. In most outlets software is put at the back of the shop where few people can see it and is given little shelf space. Frequently it is displayed inside the forbidding glass cabinets, a discouragement to browsing customers. The display can be confusing, with Spectrum software jumbled up with VIC 20 and Commodore cassettes, under the misleading sign reading 'Atari', or even 'Computer Books'. Cut-price Mastertronic tapes stand shoulder-to-shoulder with full-priced Virgin games, and the price of a particular item can vary on different shelves in the same shop.

Finding software and getting technical help is frustrating for the potential customer. Few chain stores train staff to handle computer buffs and some staff are transferred from other departments to work with computers without having the slightest idea of what a computer can be used for. Those assistants are good at handling merchandise but when it comes to providing information about it they are lost. When in doubt, the answer is "It's out of stock".

WH Smith give the best training of all the computer retail stores and Currys is about to give its staff some help by sending them on courses. Those will take place at Currys training establishment at Worthy Park. The company hopes to turn out computer consultants which it will distribute among 90 of its top computer stores. The consultants should be able to talk about the market, advise which software and machines to buy and how to program.

The identification by Currys of the need for trained consultants in its stores shows that some movement is being made toward market maturity, although chain stores still have a long way to go.



The problems are not only concerned with software distribution and retailing. Readers of *Sinclair User* have experienced difficulty in buying machines and hardware add-ons. One reader had difficulty in obtaining a complete printer package for his Spectrum. He tried Boots, Laskys, Dixons and a back street computer shop before going to a mail order company. That company, Transform, delivered printer, leads and interface on the day that the order was confirmed. If shops are going to carry printers or computers who not stock the necesssary interfaces between the two?

Discs and printer ribbons are notoriously difficult to obtain off the shelf even from the same shops that supply the disc units or printers. One *Sinclair User* staff member bought a printer at Dixons and was told, "Sorry, we don't have any spare ribbons for that printer". WH Smith was no more helpful, Boots had never heard of the printer and Laskys said that one was on order.

A solution to the hardware problem might be elusive but the answer to software availability may be near with the introduction into John Menzies of a system of electronic distribution by a company called Program Express.

Shops using the system each have a computer terminal linked to a mainframe at a computer centre. When a customer wants a particular program the assistant selects the program required. The mainframe can hold 1000 programs at a time and those are updated regularly. The machine downloads the selected program onto disc, tape or ROM cartridge and it can then be taken away.

The retailer would never again have any difficulty in finding or stocking a piece of software. Mind you, the distributors might complain. There would be less need for their services in a world in which software is on tap in the high street.

John Gilbert

First, a question.

Who do you think are the world's most avid consumers of microcomputers?

The ingenious Japanese? The fashionable French? The acquisitive Americans?

Believe it or not, it's we British who own more micros per person than any other nation on earth.

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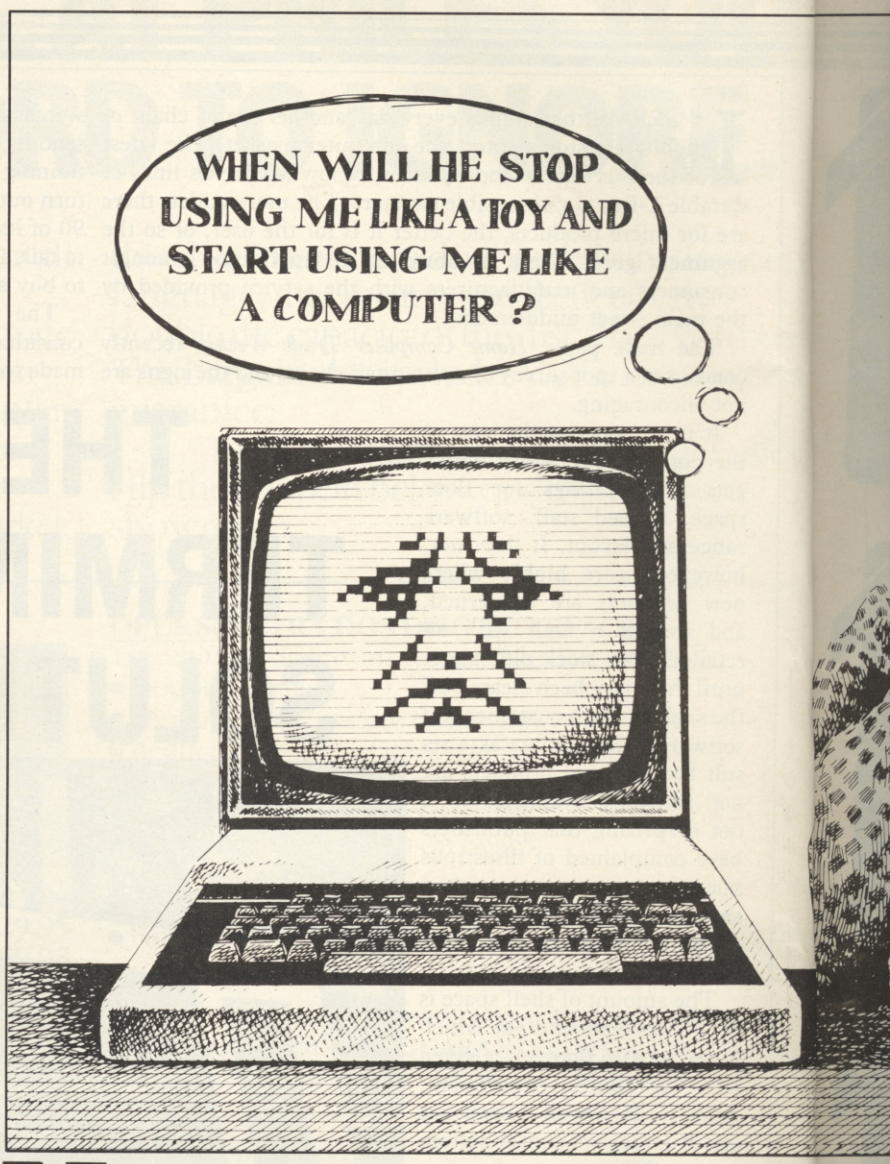

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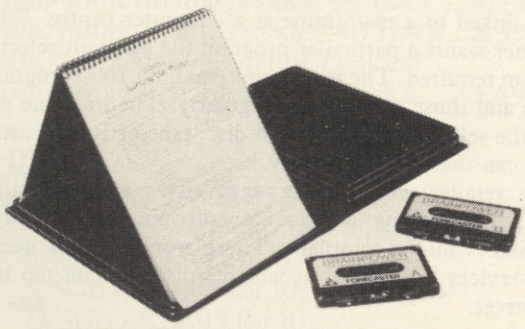

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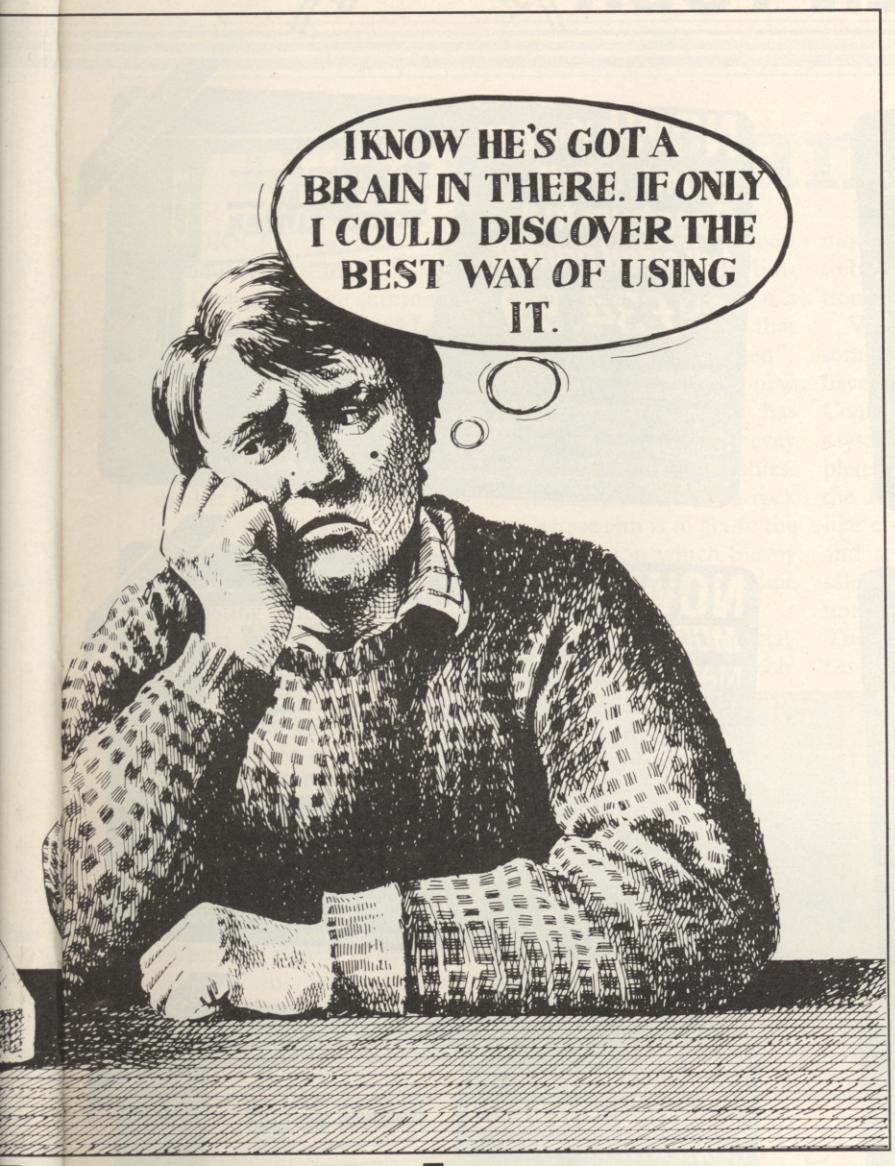

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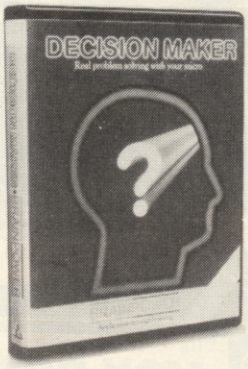

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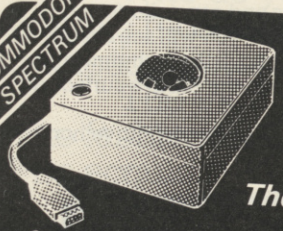

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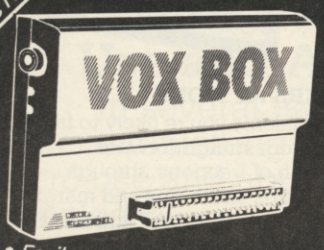

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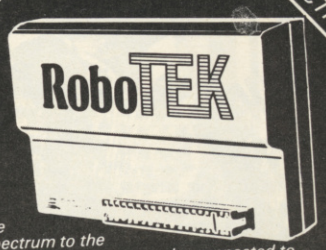

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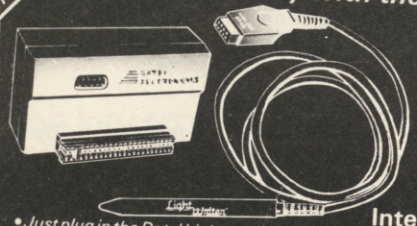

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Virgin revamped

MEDIOCRE software has become the hallmark of Virgin Games, but the autumn is going to see a fresh start for the company according to managing director Nick Alexander.

Virgin is going to change its approach to the games market and no longer release a mass of titles for a wide range of machines. Instead it will focus its attention on promoting one or two new titles at a time, concentrating on the Spectrum and the Commodore 64.

Alexander says: "This autumn we are only releasing six titles, all of which have been extensively researched and tested for market appeal and we are going to market the hell out of them".

Two of the six titles are Spectrum games. The first, released in September, is **Strangeloop** and is Virgin's answer to the **Jet Set Willy** cult. It is an arcade adventure game and Virgin is offering a £2,000 robot for the first person to complete it.

Steve Webb, Virgin's Technical Manager, says: "We believe that Strangeloop takes the Spectrum to its limit. We would have called it a Mega Game but we felt that the term has been devalued".

The Biz is the second new Spectrum release and has been written by Chris Sievey of rock group The Freshies. It simulates the life of a rock star whose aim is to get to the top, a vocation which Sievey has been following for some time.

Both games use the specially developed Flashload technique which allows programs to be entered in under a fraction of the normal load time.

Virgin is also dropping some of the titles that they have been marketing. Jeremy Cook, commercial director, says: "We've taken our complete catalogue, thrown out the few duff titles that we, like everyone else, have had, and are putting the rest on sale at a retail price of £2.99 until the end of November. That's a saving of between nearly £3.00 and £5.00".

Virgin Games' prestigious new headquarters

Anti-piracy software

A REVOLUTIONARY remedy to software piracy has been introduced by CSP Systems.

Padloc Nine is a software-based device which can be operated from a Basic program and will protect cassette software for the Spectrum.

The package requires no extra hardware to operate it and is unlike any other system because it acts against copier programs and not hackers who are intent on using their initiative to break into programs.

The system is aimed at any programmer or software house that requires it. The company claims that pirates are unlikely to even detect the operation of the device within a piece of software and that no duplications of a program need be alike.

More information about Padloc Nine can be obtained from CSP Systems, 213 Stainbeck Road, Leeds.

Our readers know best

SINCLAIR USER is the second best selling computer magazine according to the Audit Bureau of Circulation (ABC) figures for the six month period January to July 1984.

The magazine had an audited circulation of more than 96,000 and no other monthly or weekly computer publication has equalled that in the Sinclair market.

As the *Sinclair User* circulation continues to grow, its readership grows even faster. A recent survey of home computer usage showed *Sinclair User* was the best read computer magazine with more than 250,000 readers.

Imagine programmers join Beyond

IMAGINE programmers have been found alive and well and working for Beyond, the company which produced the **Lords of Midnight** adventure game.

The group of six including John Gibson, of **Stonkers** fame, is working on an adventure, called **Shadowstar,** for the company. Simon Goodwins, says: "They approached us as they were looking at the possibilities of staying together as a group".

One of the head programmers working at Imagine who did not join the group when the company went into liquidation was computer whizz kid Eugene Evans. Like the other directors of Imagine, he appears to have gone to ground.

Comrade Clive

SMUGGLING COMPUTERS into Yugoslavia used to be big business because the government frowned upon the import of machines by individuals.

Despite the unofficial ban on microcomputers small groups have been able to smuggle machines into the country. As a result at least 20,000 machines have been smuggled in, two computer magazines have been launched and a game for the Spectrum about computer smuggling, called Contraband, has just been released.

All that is about to change, though, as Sinclair Research has agreed a deal with ISKRA electronics to import Spectrum parts into Yugoslavia where machines will be assembled and marketed.

Asked whether the decision was taken at government level Julian Goldsmith of Sinclair Research says: "Our overseas policy has always been to work with British embassies and consulates so I would think that something like that would be the case".

The Yugoslav Embassy could throw no light on the matter and told us to contact the Yugoslav economic chamber. A spokesperson there says: "There is no ban on the import of computers but an individual who tries to bring a computer into the country may have to pay certain duties. I'm afraid I can't tell you any more as it changes so often".

Damned winners

MORE THAN 2000 entries were received for **The Inferno** competition published in the August issue of *Sinclair User*. The 250 winners, who will each be sent a cassette of the game from Richard Shepherd Software, are listed below:

J Beattie, Aberdeen; Nicholas Court, Bromsgrove, Worcs; S Houghton, Lytham, Lancashire; Katy Muller, Avonside, Leamington Spa; Colin Haughton, Felixstowe, Suffolk; G Moffatt, Sunderland, Tyne & Wear; Ian Thompson, Grays, Essex; Gary Varnham, Bolton, Lancs; Phillipp Ewart, Cheltenham, Glos; J M Lownders, Knaresborough, Yorkshire; C P Webb, Eastwood, Nottingham; Brian Axten, Shepshed, Leicestershire; Lawrence Gilbert, Workingham, Berks; Gavin Mills, Wetherby, W. Yorks; Paul Holden, Rustington, W. Sussex; Steve Ross, Inverness; Mike Mansfield, Hawkhurst, Kent; B Johnson, Pimlico, London; G A Hold, Wakefield, W. Yorkshire; M Wideman, Halifax, W. Yorks; Colin Anson, London, NW2; Ian Clay, Grantham, Lincs; Stephen Pettigrew, Epsom, Surrey; Christopher Haswell, New Barnet, Herts; Nicholas Edwards, Reading, Berks; Niall Fernie, Caithness, Scotland; Richard Costall, Harborough, Leics; J Barnett, Todmorden, Lancs; A E Rochard-Thomas, Purley, Surrey; D C Ward, Chippenham, Wilts; J A Garwood, Colchester; G Davis, London, W14; L Williams, Wrexham, Clwyd; Ashley Ross, Westcliff-on-Sea, Essex; J G Farrell, Sunderland, Tyne & Wear; P Harvey-Hunter, Gosport, Hants; Jonathan Rees, Headington, Oxford; Nigel Knowles, Reading, Berks; Simon Strong, Willesden Green, London; A G Sherriff, Keighley, W. Yorkshire; G Henry, Wirral, Merseyside; Sheila Thomas, Duxford, Cambridge; J D Whitaker, Liversedge, W. Yorkshire; George Gilpin, Stretford, Manchester; Martha Lewis, Derrington, Nr. Stafford; G G Robinson, Edinburgh; Jason Goodwin, Nailsea, Avon; Jonathan Veal, Market Rasen, Lincs; Davis Lumsden, Glenrothes, Fife; Paul Gamble, Dereham, Norfolk; Adam Harvey, Gt. Ormesby, Gt. Yarmouth; Steinar Nohr, Bertnes, Norway; David Cadwallader, Corringham, Essex; Stephen Hardcastle, Hayling Island, Hampshire; Michael Turbett, Co. Tyrone, N. Ireland; Bernie Hamilton, Barnard Castle, Co. Durham; Shirley Edge, Wrexham, Clwyd; Timothy C Sellick, Bridgwater, Somerset; J S Wijaya, Jakarta, Indonesia; Michael Thompson, Bearsden, Glasgow; Valerie Rickis, Edinburgh; Pedro Santos, Madrid, Spain; Paul Staniford, Bletchley, Milton Keynes; S J Foster, Spilsby, Lincs; Philip Allen, Cheltenham, Glos; Dean Johnson, Portsmouth, Hants; Frank Burns, Stevenstow, Ayrshire; Jacky Martin, Stowmarket, Suffolk; Nicholas P McNally, Farnham, Surrey; T W Arkinstall, Epsom, Surrey; Christopher Wood, Thames Ditton, Surrey; John Blondel, BFPO 58, Cyprus; James Bankers-Fay, Teignmouth, South Devon; Stephen Chapman, Ivybridge, Devon; Diane Harvey, Colinton, Edinburgh; C H Gardner, Newcastle-upon-Tyne; Chris Stainsby, Heanor, Derbyshire; Graham Brown, Heaton Chapel, Stockport; B R Grunshaw, Blackburn, Lancs; J Boarman, Woolston, Warrington; P A Barrett, Camborn, Cornwall; Keith Morrison, W. Bridgford, Nottingham; Mark Nurse, Withernsea, E. Yorkshire; P J Crocker, Rossendale, Lancs; K Tunnicliffe, High Heaton, Newcastle-upon-Tyne; Peter Ellis, Aylesbury, Bucks; Eamonn Ahern, Midleton, C. Cork; Richard Pearson, Chelmsford, Essex; Colin Johnson, Auckland, Co. Durham; Jason Senior, Huddersfield, Yorks; Ronald Fraser, Ayr, Scotland; Jonathan Kelk, Ruddington, Nottingham; Steven Pinfold, Par, Cornwall; Philip Saunders, New Milton, Hampshire; K J Simpson, Nr. Dover, Kent; Gavin Currow, Hayle, Cornwall; Owen Brunette, New Romney, Kent; Mr Brame, Walling, Kent; Elizabeth Shipworth, Nottingham, Notts; Ahmed Jawed-Al Moosa, Safat, Kuwait; Ian Gostellow, Dewsbury, W. Yorkshire; Jason Cales, Nr. Bristol, Avon; C Riby, Barnsley, S. Yorks; Nicholas Bower, Sheffield, South Yorkshire; Alistair Brown, Livingston, W. Lothian; Steven Paton, Edinburgh, Scotland; Ray Speller, Ware, Herts; J F Cunningham, Blackpool, Lancashire; Adrian Wilson, Grimsby, S. 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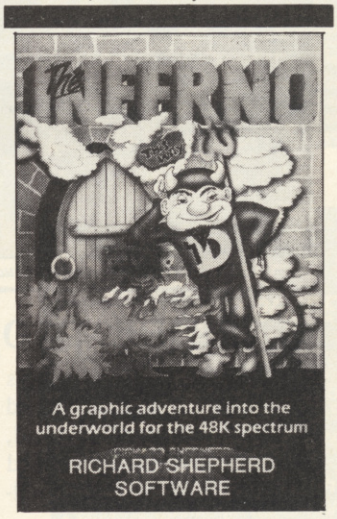
Yarmouth, Norfolk; Neil Gunn, Goole, North Humberside; James Longwill, Balsham, Cambridge; David Cooke, Redruth, Cornwall; Denis Noctor, County Donegal, Ireland; Andrew Brodie, Greenfaulds, Cumbernauld; Paul Hale, Hull, N. Humberside; J E Collins, Sevenoaks, Kent; Peter N John, Guildford, Surrey; Graham Epps, North Lancing, Sussex; Jonathan Wragg, Oughtibridge, Sheffield; Ian MacAdam, Wirral, Cheshire; P C Thompson, Consett, Co. Durham; F Spence, Northampton; Leigh Saunderson, Penrith, Cumbria; Michael Coates, Wallasey, Merseyside; B King, Bexleyheath, Kent; Paul Jordan, Pontefract, W. Yorkshire; Stephen J Lear, Crewe, Cheshire; V Ratnayake, Harrow,



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There's only one thing wrong with the ZX81. Its keyboard.

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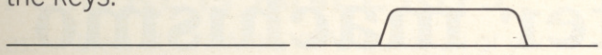

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Playing for time

A WORLD record for the continuous playing of computer games has been claimed by 18-year-old Sean Sullivan of East Yorkshire.

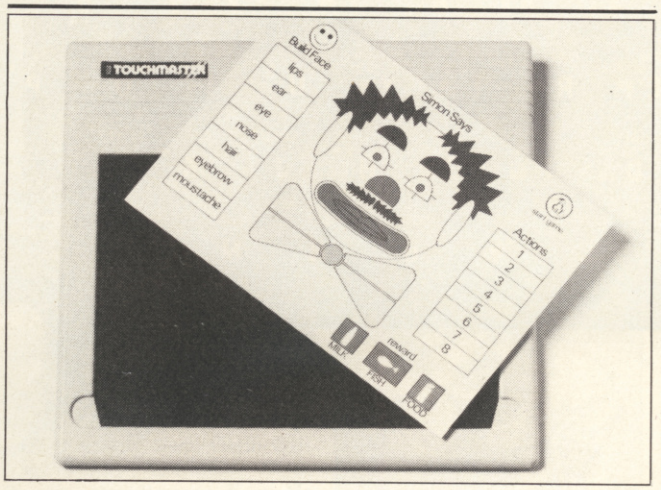
He and his friend Paddy Bell started the attempt at 8 pm on Tuesday 28 August at the Bridlington Computer Centre. Paddy gave up on Wednesday afternoon, after 30 hours, but Sean went through until 10 pm on Thursday 30 August. The record was set at 50 hours and Sean says: "I had set myself this target when I started, yet when I reached it I still felt fresh enough to do a lot more".

Unfortunately, the Guinness Book of Records has refused to have a category for the continuous playing of computer games. The organisers of the event say, however, that it was conducted under the strict standards required by Guinness in the hope that the organisation will relent.

Sean was allowed a five minute break during each hour of the event and two independent invigilators were present at all times. The software was supplied by the Bridlington Computer Centre and the machines used included both the ZX-81 and the Spectrum.

The marathon was sponsored in aid of the Kingfisher Trust, a charity whose aim is to set up a leisure centre for young people in Bridlington, especially those who are unemployed.

Mike Gowen, Chairman of the Trust, says: "We are delighted to be involved in this magnificent effort by Sean and Paddy. Not only will they have raised several hundred pounds for the Trust, but this has given us the opportunity to be involved with young people in something which is of great interest to them, namely computer games. As a result of this Sean and Paddy have already offered their services to help teach young people to program and use computers more effectively, just as soon as we have our centre".



A REVOLUTIONARY touch sensitive keypad from Touchmaster will provide an aid to those who have difficulty using the Sinclair keyboard. The device interfaces with the computer and, with the aid of a series of learning packages together with pad overlays, to be released later this year, will do away with the need for a keyboard.

Fuller is bought out

THE FATE of Fuller Design, the company which produced hardware for the Sinclair computers and alienated many customers as a result, has finally become known. It has been acquired by a company called Nordic Keyboards.

As a result of the move managing director Roy Backhouse and his 12 staff have been made redundant and the company name and tooling taken by Nordic.

Backhouse blames a magazine publisher for paving the way to the ruin of a company which last year had an annual turnover of £500,000. Fuller owed the publisher £3,000 in advertising debts but when the case came to court Fuller Design was wrongly named as Fuller Micro Systems and the claim failed.

Unfortunately, the news of the debt made other companies wary of doing business with Fuller. Backhouse was forced to call a meeting of creditors and later the company was sold.

The new owner has promised to correct the kind of delivery problems which customers had experienced.

Weetabix goes soft

A NEW ARCADE game called **Weetabix versus the Titchies** is to be launched by Romik Software to coincide with a television competition campaign by cereal maker Weetabix.

The game features the characters of the popular television advertisements, runs on the 48K Spectrum and was written by Chris Ratcliffe. Romik says "we're glad to be leading the way into the consumer market".

Computer machismo

FEW PEOPLE may know but 1984 is supposed to be the year of WISE — Women Into Science and Engineering.

According to research done by Ebury Software, however, women are not getting a fair deal in the world of computers. The company report, collated by Audience Selection, shows that males hog the computer at home as well as in the office. In selected families 51 per cent of sons and 25 per cent of fathers used the computer most as opposed to 19 per cent of daughters and only five per cent of mothers.

As a result of the survey Ebury, an imprint of the National Magazine Company, is determined to generate more female interest in computers by publishing software which is specifically aimed at women. These titles will be launched under the name of one of NMC's magazines, *Good Housekeeping*, which the company hope will promote the cause.

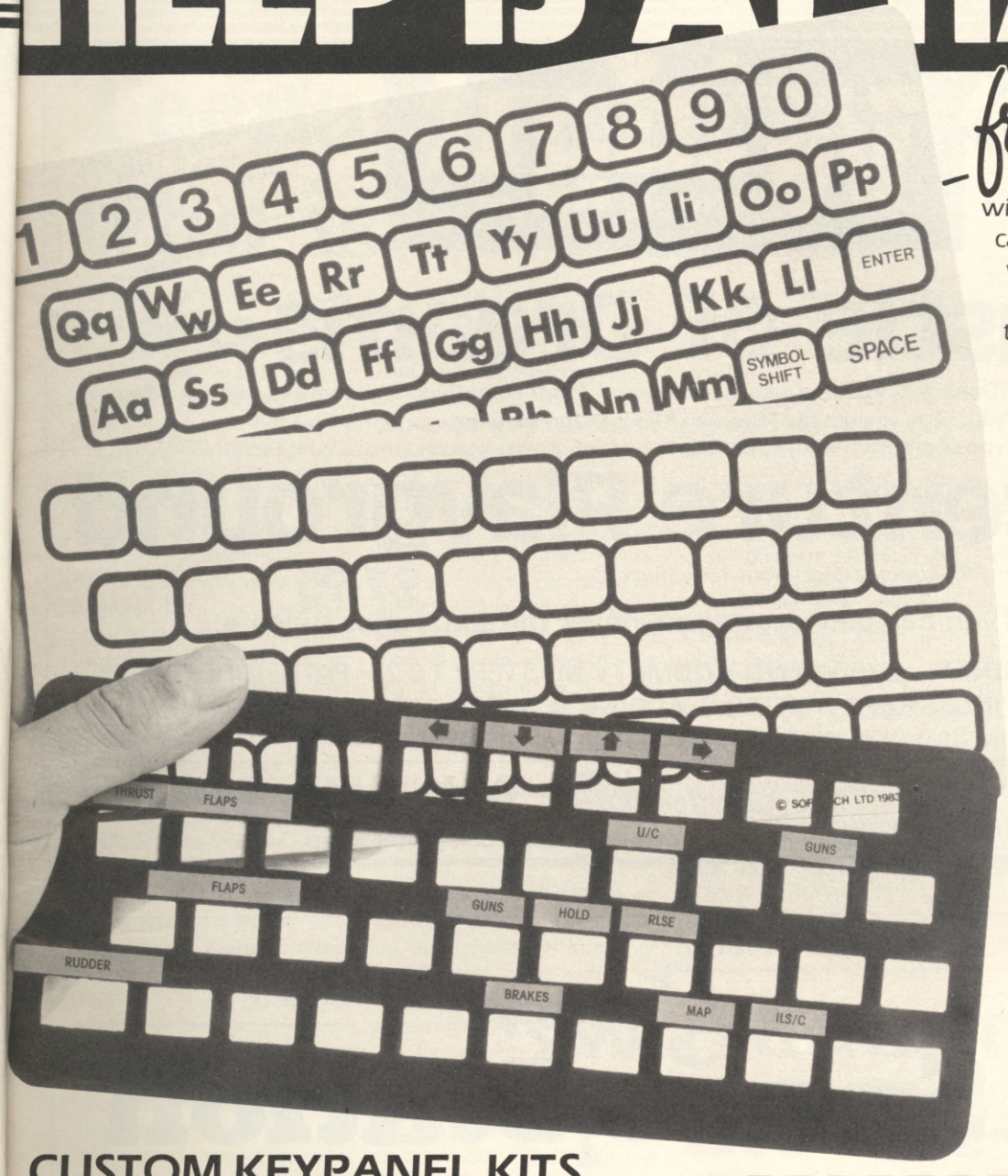
Roger Barrett, Publishing Director of Ebury says: "A woman has just as much ability as a man when learning about computers. In fact, the positive, traditional skills women have, for example, organisation, typing, languages and plain, old commonsense, are all very relevant to computers".

A new book, *Women and Computing*, by Rose Deakin also follows the theme and shows that it is possible to break into the computer world with few qualifications. Deakin explains that some of the greatest programmers in the world were women, such as Ada Lovelace.

More information about the book can be obtained from Papermac, 4 Little Essex Street, London WC2R 3LF.

HELP IS AT HAND

from Softeach



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These flexible printed overlays are mounted on individual locating frames and produce clear and simple keyboards for young users.

The kit comes in a clear plastic storage wallet and contains a complete range of keyboards, printed in a large clear typeface. (Lower case, upper case, upper + lower, blank key outlines and a blank panel for you to draw on). That's a total of six Keypanels in each kit.

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Teenage pirates—who is to blame?

THE calculations of software houses are based on the premise that every schoolkid would be willing to buy a tape if they could not obtain a copy.

I would never shell out £15.00 for **Sherlock,** but if someone offered me a copy I would take it, so how could Melbourne House claim to have lost the £15.00 which I wouldn't have paid anyway?

Of the many Spectrum owners I know, all own at least five original tapes, and most have over 30. So stop getting at the kids — who can't afford any more games than they buy already — and try to get the real pirates who churn out hundreds of copies a day, flogging them at cut prices. Software houses and others, give us a break.

Colin Baxter, aged 15, Glasgow.

I WOULD like to comment on Julian Rowland's letter concerning software piracy in the last issue.

It is good to see someone of his age taking a sensible and moral stand on this issue. My school has 10 Spectrums, which are available for games as well as educational use, and I have had to take a very firm line about copying games, to the extent of banning certain boys from the machines.

However, there are two points I would like to make regarding tape copiers. Firstly, most of the boys I found to be copying tapes were doing so using only tape-recorders, notably the dual cassette "ghetto blaster" type. Tape copiers would have been a mystery to most of them, since they were very definitely arcade players rather than would-be programmers.

Secondly, I use a tape copier with no moral scruples at all to transfer programs of all kinds onto microdrive, and I suspect that is their major use. I am quite aware that this may be technically illegal; but if I bought a program, on tape, for my own or school use, and can add the convenience of microdrive, why not? Very few manufacturers seem to be supplying anything on microdrive yet; those who do expect me to pay as much as £8.00 more than for the same program on cassette.

C J Dickinson, St Edmund's Junior School, Canterbury, Kent

I TOO have noticed the huge software piracy which goes on in schools. I know of people who have copied as many as 30 games on one two-hour tape.

I feel a great deal of sympathy for software firms, but surely they could spend more time on protecting their tapes from pirates. Whilst playing **Flight Simulation** I found it was simple to BREAK into the program. **Test Match** by GRL is also extremely easy to BREAK into. Many other games are the same. Surely the software firms have only themselves to blame.

David Betteley, aged 15, Newcastle, Staffordshire.

The world's worst game?

METEOR STORM for the 16K ZX-81 from dk'tronics, is so pathetic I decided to warn people of spending their money on it.

I balanced my cassette holder on the fire button of the computer and manoeuvered my character into the right hand corner of the screen. As I write it is now running.

I believe this game is barely good enough to be a magazine listing, and could be a contender for a record — the only game with a negative Gilbert Factor.

Alistair Macdonald, Sale, Cheshire.

Hacking in the jungle

HAVING JUST hacked my way through **Sabre Wolf,** I have discovered how to obtain infinite lives.

Load the first part of the program press BREAK and stop tape. Type: POKE 23756,1:CLEAR 65535. Edit the line, move the cursor to the end and delete: PRINT USR 23424: Add line 10, with any of the following POKES: POKE 43575,255 — for infinite lives, on player; POKE 45520,255 — infinite lives, two players; POKE 45599,255 — number of initial lives (1 to 255); POKE 41725,255 — no limit on gained lives.

Next add line 20: 20 PRINT USR 23424 and then type RUN to load the rest of the program.

Jeremy Diccox, Dorchester, Dorset.

I HAVE broken into **Cavelon** by Ocean Software and discovered a way of getting any level.

First use all of the crosses, then by pressing every key at once the message "Hi, Chris, what do you want?" appears. Then press any key from 1 to 6 and the game returns to normal. Now the game will start from the level pressed. At the end of level six it plays *Greensleeves.*

Marc Jones, Gotham, Nottingham.

Abandoning the ZX-81

THERE HAS been in your magazine a growing, an annoying trend away from the 'dwindling' ZX-81 market towards the Spectrum and now, to my horror, the QL.

Take the September issue for example. Only four of 56 reviews were for the ZX-81. Most of the Hints & Tips, Helpline and nearly all of the Hardware reviews are for the Spectrum. I give up.

Please don't desert us — there are still a large number of us around. The ZX-81 remains an excellent beginner's computer. Finally here is a tip for the ZX-81 which helps overcome its annoying limited List function.

To avoid the program text scrolling up the screen as it is typed in, delete an early non-existent large line number — about 9000. Upon pressing Return you do not get the last line number at the bottom of a full screen, but a screen with the number at the top and the rest clear. It remains that way after subsequent line numbers are added.

Richard Brooker, Headingley, Leeds.

● *Your criticisms have been noted, and we will endeavour to keep the ZX-81 flag flying. Regarding software and hardware reviews, very little for the ZX-81 is produced nowadays, and while this is a regrettable state of affairs, we can only review what we receive.*

more letters on page 17

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Spectrum complaints

YOUR correspondents seem suprised that they have had to return the odd Spectrum or two under guarantee. I had my first Spectrum in May of this year. Three months later, my fifth 48K Spectrum crashes anywhere and everywhere. A replacement, machine number six, will, hopefully, be given me next week. Can anybody beat this infamous record?

Incidentally, Sinclair Research as a company has been singularly unhelpful and unsympathetic on the phone, and unusually rude in answering my letters. What a dance it is leading its founder.

I hope this letter will encourage any other unhappy users to complain — not to Sinclair Research, who couldn't care less — but publicly. I hope that if Sir Clive Sinclair should see this he will apologise on behalf of his company for the unfriendly treatment I have received from his staff and assure me that at least one machine is properly tested before it reaches me.

Terry Braverman,
Cambridge.

DAVID Hetchworth (Letters, September) should consider himself lucky that he couldn't obtain a 16K Spectrum.

In November 1982 I purchased, direct from Sinclair, a 16K Spectrum for £125, an issue 2. It performed perfectly until June 1983 when the keyboard ceased to function. Taking a note of the serial number I returned the computer to Sinclair's marketing agency.

Imagine my disgust when 28 days later I received an issue 1 Spectrum. By that time, the value of the replacement was £99.95, not the 'equivalent value' required by the Sale of Goods Act.

In common with most other people my letters to Sinclair Research have gone unanswered.

The reasons for this cavalier attitude seem quite clear to me; why should an organisation worth many millions of pounds trouble itself with complaints? We the dissatisfied must just sit back and remember Ted Heath's phrase 'The unacceptable face of Capitalism'.

Trevor Jones,
Oldham, Lancashire.

No bugs on moon

FURTHER to John Lambert's review of **Moons of Tantalus** in the September issue, in which he stated that there is a bug in the program, we are writing to assure all your readers that the problem has now been corrected and that all copies of the game are now totally bug free.

We should like to thank *Sinclair User* for its assistance, but would point out that the price of the game is £6.45.

If any of our customers have found that they have a faulty copy of Moons of Tantalus and wish to have it changed, will they please return it to us and we shall be delighted to send them a revised copy, completely free of charge, together with their refunded postage?

Whoops, sorry everyone!

B G Cornhill,
Cornhill Services,
2 Penrith Way,
Aylesbury,
Buckinghamshire,
HP21 7JZ

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by ZAKZ
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WHAT IF YOU'RE STOPPED AND SEARCHED?... THEY'LL THROW THE BOOK AT YOU!
NO CHANCE! MY DISGUISE IS PERFECT... YOU LOOK MORE LIKE THE SHIFTY TYPE!
PANICKY
DO YOU MIND OPENING YOUR CASE, SIR?
CUSTOMS
SNIGGER!
STROLL
HA HA! HE DIDN'T LOOK TWICE AT ME....I GOT AWAY SCOTT FREE WITH THIS LOT!
FED-UP
I NEARLY BURST OUT LAUGHING BACK THERE!
FUNNY YOU SHOULD SAY THAT..
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NOW MANUFACTURED IN YUGOSLAVIA
NO WAITING LIST.. PLENTY TO GO AROUND
ANYONE WANT A CASE FULL OF SPECTRUMS GOING CHEAP?

Disgusted

I AM writing in disgust about Steven Robbie's letter — *Sinclair User,* September — criticizing your reviews of **Halls of the Things** and **Maziacs.**

I have both and I am very pleased with them. Maziacs, far from being monotonous, is exciting and though it's not the hardest Spectrum game ever it is challenging.

All I can say is Steven Robbie has no taste whatsoever.

Andrew Moore,
aged 13,
Liverpool.

I MUST complain at the lack of credibility in your reviews. **Mugsy** does not deserve a Gilbert Factor of eight as it is, leaving aside the graphics, a dull and repetitive game. **Urban Upstart,** on the other hand, is an amusing and reasonably complex adventure deserving at least nine.

Games should be reviewed by the age group which plays them and so I suggest a team of younger reviewers.

Apart from those small points *Sinclair User* is a great magazine easily beating its other rivals.

Sean Buckley,
Hadleigh,
Essex.

AFTER READING various reviews of **Mugsy** and seeing its high placing in the charts I decided to buy it.

I was very disappointed; the graphics are not bad but the game is boring. All you do is type in numbers and the things the characters say are nearly the same every game. There are few scenes.

It is not a patch on **The Hobbit** and how it gets eight points in *Sinclair user* I'll never know.

Chris Boyes,
Wakefield,
W Yorkshire.

Underlining the easy way

IN THE 'Hints & Tips' article (September) there is given a 'memory remaining' routine. For my 48K machine I have used the much simpler ROM routine: PRINT 65536 — USR 7962.

USR 7962 gives the ROM and RAM in use so by subtracting from your total capacity (65536 for 48K) you get the memory remaining. It also allows for microdrive and net channels.

N H Unitt,
Stratford-upon-Avon,
Warwickshire.

Just fancy that

AS AN update to the **Chuckie Egg** affair last mentioned in the September issue, I am pleased to inform you I have reached level 122 with a score of 2,306,560. It took me four hours 30 minutes, then I had to switch it off before my brother or his Spectrum blew up.

Craig Ruxton,
Dalrymple, Ayrshire.

● *You don't think anyone is going to believe that, do you?*

AFTER READING the letters in your September issue I would like to point out that I am the **Sabre Wulf** king. I finished first on June 7.

For proof see *Popular Computing Weekly* Vol 3, No 30. For further proof contact Ultimate.

I finished with a score of 124,405 and 80 percent.

Des Claypole,
The Sabre King,
Peterborough,
Cambridgeshire.

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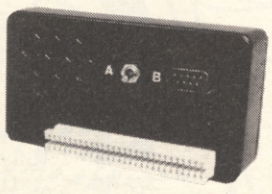

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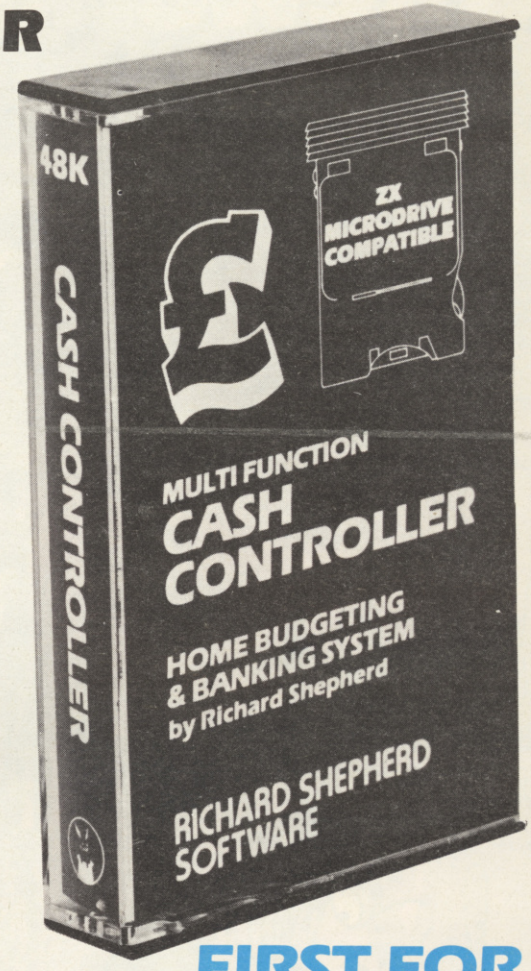

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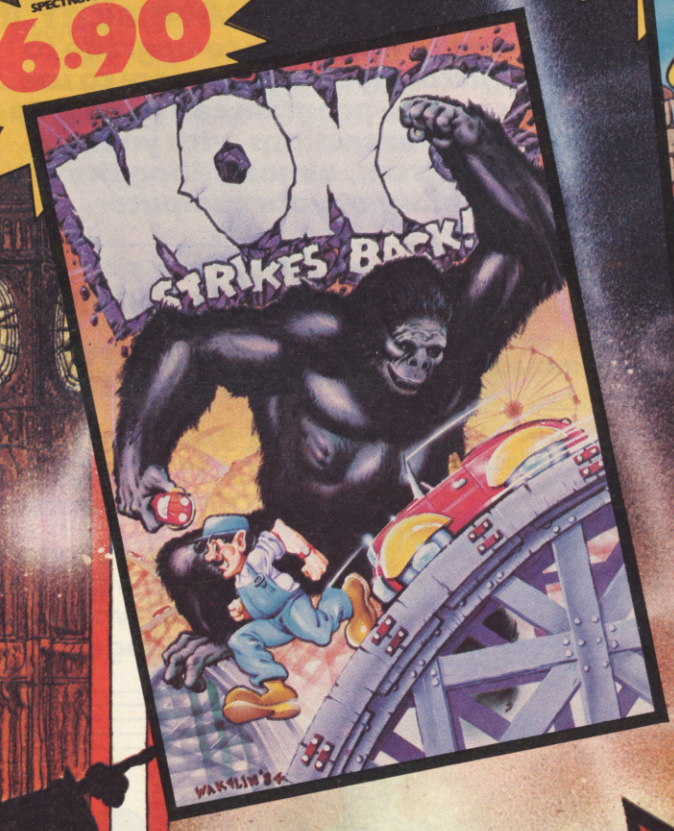

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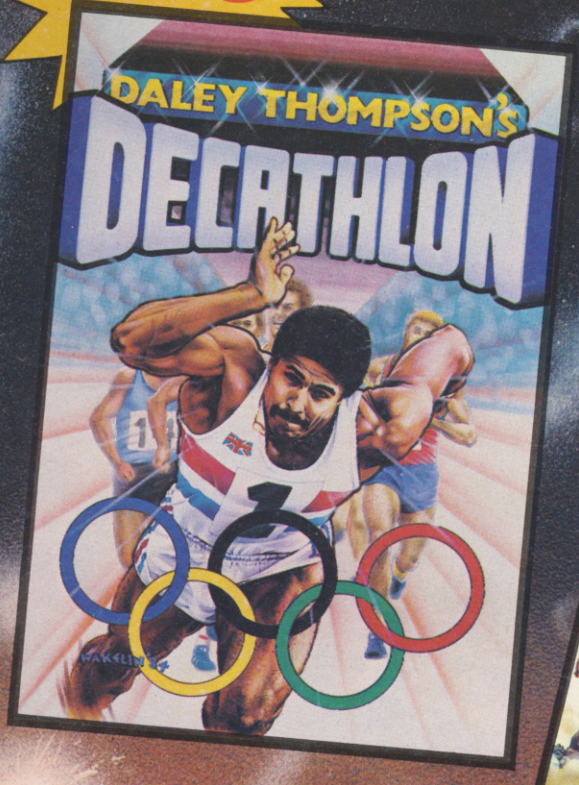

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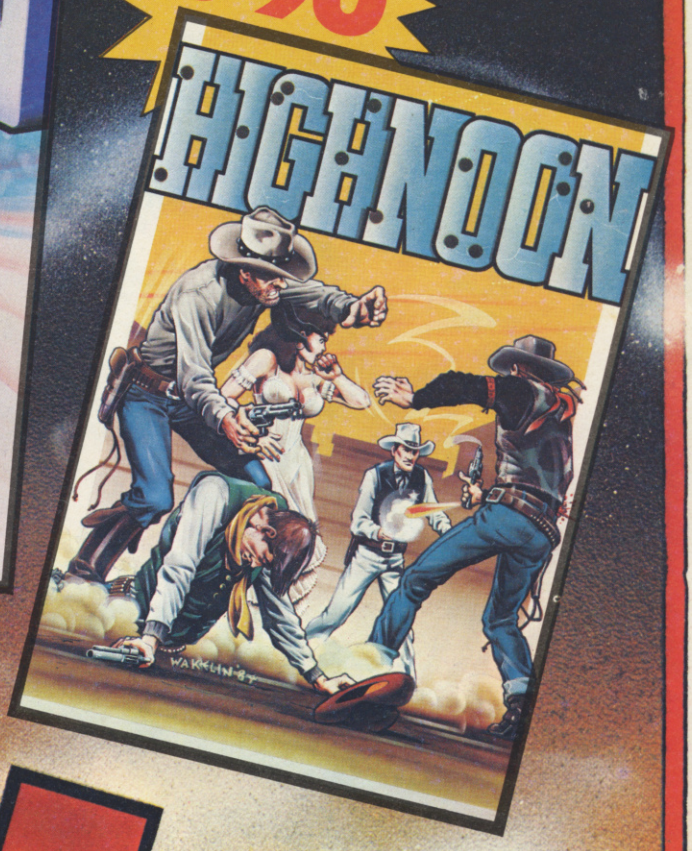

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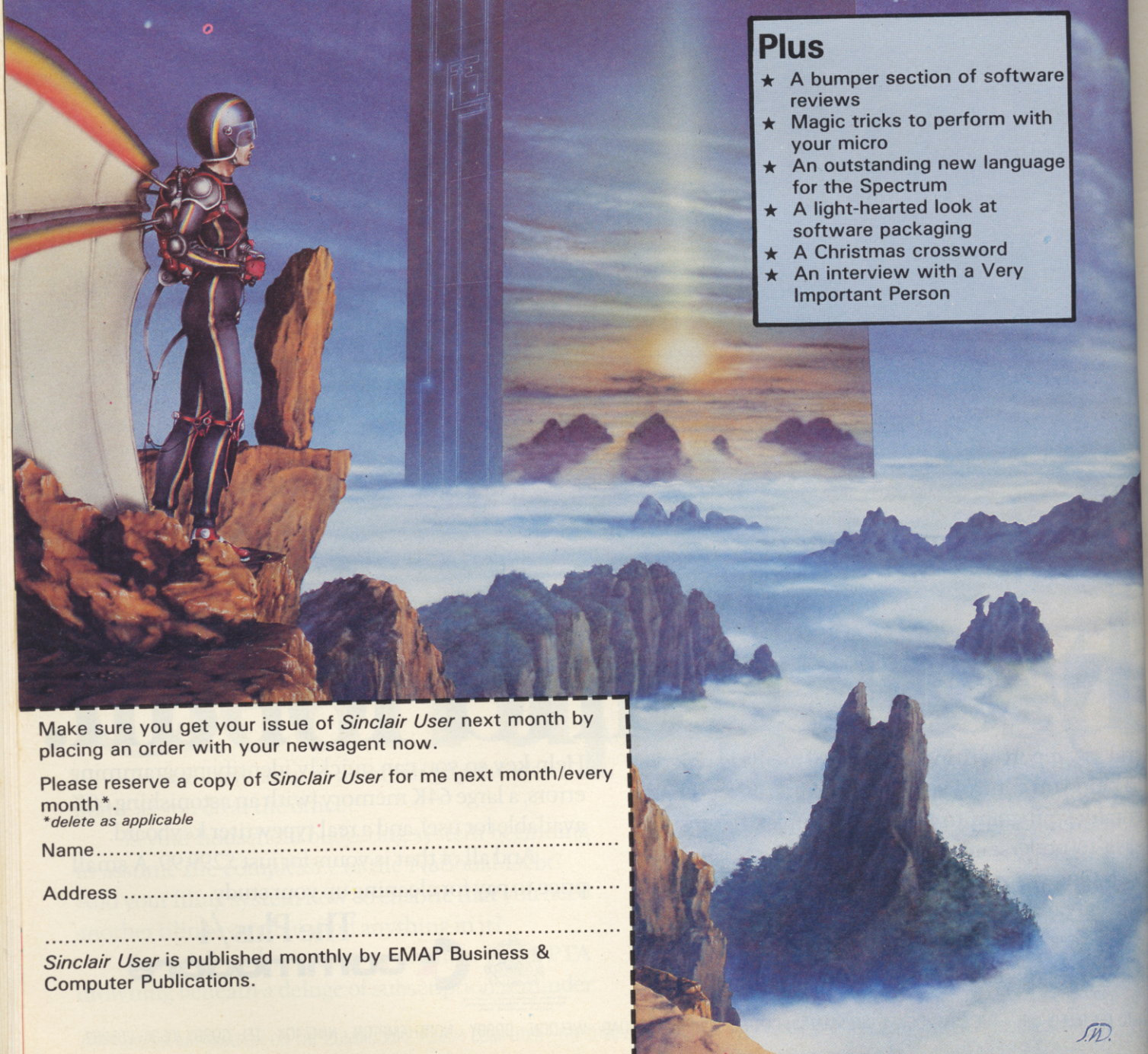

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Meet the guardian of chaos and levitate in 3D Avalon

ENTER the 3D movie world of **Avalon.** You are a wizard intent on the destruction of an evil image who inhabits an underground web of caverns inhabited by goblins, skeletons, wraiths, a guardian of chaos and seven wizards.

You move around the rooms after casting an astral projection spell which will enable you to levitate.

Pursued by the various monsters which dwell in the caves you must accumulate your power by finding spell scrolls. Those enable you to freeze your enemies and summon a servant to help you in your quest for the mage's ectoplasm.

To reach the bowels of the earth you must pass through the gate-house level and find a treasure chest in which the key to the dungeons is hidden.

As you travel through the adventure you will become wise in the ways of magic and earn gradings no doubt given by the magic circle. Those are divided into stages and ranks. A stage describes the physical location at which you have arrived in the game. Those range from Apprentice to Supreme. The ranks denote your skill as a magician, and start at Lore Seeker progressing to the august title of Lord Lord.

The magic system in particular breaks new ground. The spells you have are listed on a scrolling window, and you must use the joystick to select the appropriate spell. Even movement is conducted using a spell, so that physical and magical activities are directly interlinked.

Graphics are not so clear as in the Ultimate arcade/adventures such as **Atic Atac**. However, the 3D representation of each room, with doors that really open, and the attempts at animation of monsters represent a bigger challenge than those earlier games tackled.

Hewson Consultants claims the game will do for computers what the *Jazz Singer* did for movies. A ridiculous suggestion which should not however detract from a product that introduces a new style and sophistication in 3D graphics. If you are into arcade games then you will enjoy moving around and killing the monsters in the maze. If, on the other hand, you like adventures you will be fascinated by the puzzles. *John Gilbert*

AVALON
Memory **48K**
Price: **£7.95**
Joystick: **Kempston, Sinclair, Cursor**
Gilbert Factor: **9**

Awkward orcs

SMOKE drifts over the devastated countryside as you set forth in search of the subterranean dens of the Death Moon Orcs. Not long ago a raiding band led by Thorg, chieftain of the unwholesome clan, laid waste your village and murdered your defenceless family. Revenge is all you seek and you will brave the perils of the Savage Lands around the Azonti river to find the bestial killers.

A magic runesword, kept by a hermit, will finish off the ghastly Thorg if you can trace it. Along your way are strewn the marks of war and death, and objects are scattered about which may help you in your single-minded quest. Magic and danger dog your every footstep.

The central theme of **Orc Slayer** by Gamma Software is relatively simple but the setting is well drawn and consistent, providing a good atmosphere for this pure text adventure. The program uses all the standard adventure commands, though the vocabulary did not appear exceptionally large. The interpreter had that irritating habit of responding to many requests with a simple 'I can't' and, at points, rejected the only appropriate responses to a given situation.

In general the program is an entertaining and eventful game full of mystery and monsters. The statutory maze is thrown in for good measure. A good average adventure in the classic mould. Slay away.

Richard Price

ORC SLAYER
Memory: **48K**
Price: **£5.50**
Gilbert Factor: **5**

Awful hawks

GAMES which have television series tie-ups are becoming popular and can be surprisingly good considering it is usually the plot and not the standard of programming that is the important aspect of the game. **Terrahawks,** from CRL is just surprising.

It uses none of the characters from Gerry Anderson's series and the graphics, which should have been the best part of the game, are slightly out of perspective and jump when a move is made in any direction.

The minimal plot takes your spacecraft into a black hole where you will find green crystal towers which you must avoid or destroy. If you destroy them you use one of your 80 antimatter bolts but if you do not then some quick action is required to avoid a crash.

Terrahawks is just another piece of mediocre space entertainment but if your idea of a good space game is blasting your way through a platoon of green monoliths then this game is for you.

John Gilbert

TERRAHAWKS
Memory: **48K**
Price: **£6.95**
Joystick: **Cursor, Kempston, Interface One**
Gilbert Factor: **5**

Astronomy adventure

ASTRONOMER by CP Software is a comprehensive package to display the planets, stars and constellations and calculate their positions reasonably accurately.

The program contains a series of facilities. You may choose to display the solar system, which will move according to a specified time lapse, or the night sky in general, which is split into five views. Constellations will be drawn in if you wish.

The Star Chart enables you to look at any part of the sky in greater detail, while the calculator gives the positions of planets and minor bodies in Right Ascension and Declination.

The accompanying booklet explains some of the principles behind Astronomy, and gives examples of how the program can be used.

As a means of learning the positions of astronomical features and as a guide to where you will actually find them in the sky, the program should prove effective. *Chris Bourne*

ASTRONOMER
Memory: **48K**
Price: **£9.95**
Gilbert Factor: **7**

Daley takes the gold

OCEAN continues its policy of bringing out amusement arcade games under license with a superb version of the popular Track and Field, entitled **Daley Thompson's Decathlon.** All ten events are represented, and played with dedication the full game is a gruelling exercise indeed.

The graphics are large and colourful. Each event has a qualifying time, and the 10 are split over two days, one on each side of the cassette. If you fail to qualify three times then you are out for the day. If you successfully complete the first day, you can go round again with higher qualifying times until your three lives are gone.

Some of the events are very tough, particularly the 400m sprint. In order to qualify you must pump the joystick backwards and forwards as fast as you can to maintain speed. After about 200m the wall of pain sets in. By a cruel trick, the 400m is the last event of the first day and the 100m is the first, so if you are still in the game you will immediately have to race the 100m just when your arm is ready to drop off.

The second day is more gentle, winding up with the 1500m which requires strategy and restraint if you are not to run out of energy too soon. All the events are reasonably easy to play, apart from the high jump, which appears next to impossible. Getting a decent score is, of course, another matter.

Arcade conversions do not always work on the small screen. Daley Thompson's Decathlon is an exception, and captures the spirit of the competition. *Chris Bourne*

DALEY THOMPSON'S DECATHLON
Memory: **48K**
Price: **£6.90**
Joystick: **Kempston, Sinclair**
Gilbert Factor: **8**

Fairy tales and factories in Glasgow

LIFE in a Glaswegian warehouse is evidently dangerous to judge from **Bewarehouse.** Glasgow-based Positive Image has created a game in which death goes hand in hand with the boredom of manual labour.

You must climb up through the various floors of the warehouse, avoiding barrels which roll along the floor. At later levels the warehouse acquires a few ghosts which chase you with murderous intent.

Unfortunately the game is a lame version of **Donkey Kong** with no gorilla, no maiden to rescue, no variety in the levels and very little in the way of addictive excitement. The cassette insert describes programmer Tom Canavan as one of Scotland's finest. I shudder to think what the others are like.

Frog Face, a text adventure from the same company, is rather more attractive. The program credits the Quill adventure system, but includes a number of attractive pictures of locations.

You have had your face turned into a frog by the evil Meegan, and must find a magic potion to restore your natural beauty. The game setting is clearly based on the land of fairytales, with whispering flowers, lucky silver spoons, royal castles and the like, although there are darker and more deadly creatures as well.

The only real fault is that it is very easy to be killed in a somewhat arbitrary fashion early on. Death traps are by no means a bad thing in adventures, but there should not be too many of them. That said, Frog Face is a pleasant romp, and since there is an option to play as a man or a woman, may have a wider appeal than the more macho monster-bashing adventures. *Chris Bourne*

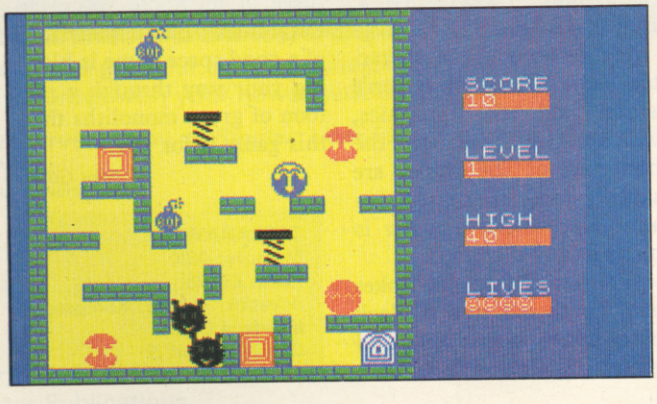
BEWAREHOUSE
Memory: **48K**
Price: **£5.95**
Gilbert Factor: **4**

FROG FACE
Memory: **48K**
Price: **£5.95**
Gilbert Factor: **7**

Egg on Humpty's face

ARTIC Computing is heading for a big fall if it thinks that its series of Humpty Dumpty games is going to be a success.

Humpty Dumpty and the Fuzzy Wuzzies is surprisingly addictive. Humpty is struck in a maze. He must avoid the evil Fuzzies, their bombs and the deadly snappers. If he is lucky he will find a transporter to reach safer surroundings.



As any good egg knows the way to get around is to roll and Humpty moves whenever you tilt the maze but be careful as he might end scrambled.

The game has a novel concept but does not develop it. There is nothing either in the scenario or technical execution makes it anything more than mediocre. *John Gilbert*

HUMPTY DUMPTY AND THE FUZZY WUZZIES
Memory: **48K**
Price: **£6.95**
Joystick: **Kempston, Sinclair**
Gilbert Factor: **5**

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Unbelievable Sound Effects

Unique Games Concept

Multiple Screens

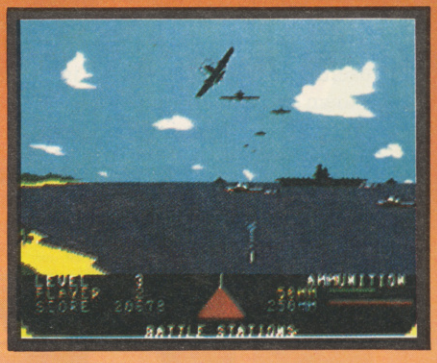
High Resolution Scenario

100% Machine Language

THE FIRST 64 GAME TO REACH No.1 IN THE CHARTS need we say more?

It's a unique arcade experience in sound and vision, and a stunning display of Spectrum capabilities.

Another quality product from *ACCESS* Software.



NOW AVAILABLE FOR THE 48k SPECTRUM **£7·95**

★ ★ ★

The great computer fraud

IF YOU have ever had a desire to take part in a giant computer fraud, or longed to break into the Pentagon's central computers, or simply spy on the private accounts of some multi-national company, then **System 15000** is the game for you.

Your friend Mike has written to you with details of a computer fraud in which Comdata has been ripped off by Realco for $1,500,000. Your task is to break into the correct computers in order to transfer the money back to where it belongs. To do so you will need to track down the appropriate accounts and find the correct code numbers to access them.

The entire game is played out as if your Spectrum really was hooked into a vast network of computers. The System 15000 of the title is a high-powered user network similar to Micronet of which you are a member. Mike gives you a few clues to start with, and there is another hacker, Geoff, who may occasionally send helpful messages to you through the system. Otherwise you are on your own.

Whenever you telephone a computer, the Spectrum responds with simulated ringing tones. Sometimes the number is engaged, and sometimes the system shuts down while security checks are made. Somewhere, someone knows you are on the track.

Undoubtedly the economy of a game in which most of the commands are in the form of numbers or character strings of only a few letters, and the display simply a series of different types of computer screen, means the actual structure of the game can be very complex. After playing for many hours, unless you are a master codebreaker or just very lucky, you will still feel you have only penetrated the outer strands of the web of conspiracy surrounding Realco and the missing millions.

System User Net #6752 **
POSTBOX 1
Enter message (Max 30 letters)
LETTER SENT RSVP ----------
1 for Menu - 2 to leave message
digit to X to disconnect

System 15000 is an absolutely first-rate game and the very stuff of which good adventures should be made. We can hardly wait for the sequel.

Chris Bourne

SYSTEM 15000
Memory **48K**
Price: **£9.95**
Gilbert Factor: **9**

Crusoe castaway

NO prizes for guessing the theme of **Crusoe** from Automata.

A map of the island takes up half the screen, and includes objects which may be useful to Crusoe, who is shown as a small figure. Various status indicators are also shown.

Crusoe's task is to assemble a decent set of living equipment without running into thorns or boulders and reducing his strength. If Automata's eccentric style appeals, you will enjoy the game, though the crabbed script and minute screen detail are likely to irritate even the most persistent.

Richard Price

CRUSOE
Memory: **48K**
Price: **£6**
Gilbert Factor: **5**

Happy driving

A new version of the **Friendly Face** microdrive utility contains several routines, including a piece of code which can be merged into other programs to catalogue and autorun programs by asking for numeric inputs entered with reference to a menu.

The RUN utility can be automatically saved to any cartridge for use with its programs and does away with the need to type in long microdrive commands which are needed when using Sinclair Basic. RUN can also be batch auto-saved onto several cartridges, one after another, using a program loop within the routine.

The utility has to be adapted for use with some programs but the manufacturer has included ready-made routines to merge Friendly Face into **Masterfile** and **Tasword Two.** That means both programs become instantly microdrive compatible so that data can be SAVEd and LOADed using microdrives.

Two new options include an intelligent FORMAT routine which will make sure that the maximum amount of storage space on a cartridge is made available every time. As with the auto-save facility it can perform its task on a batch of cartridges.

The second new function is a CATalogue of the files on a selected microdrive cartridge which will be listed on a printer. It gives a hard copy of files on a cartridge.

Also included is a Masterfile file which contains two formats. The first, Action, can be used as a database in which you can include a diary of events. These records can be displayed on the screen or printed out for later use.

Memo allows the input of notes and memorandums on a variety of subjects. These can be accessed efficiently using Masterfile.

John Gilbert

FRIENDLY FACE
Memory: **16K**
Price: **Cartridge £12.95**
Cassette £6.95
Gilbert Factor: **7**

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■ Epic in sheer size — there's more than 250K for you to get yourself killed in.

Spectrum 48K or Commodore 64 (Turboload)

Full-colour booklet, packed with cryptic clues to help you unravel the mystery — and win the £25,000 reward

Music and sound effects built in

5 PROGRAMS IN ONE

■ All 5 Adventures are linked — but you can choose to play them separately. And they all have REAL TIME built in. So if you don't think fast, you wind up as a pterodactyl's lunch, die of over-exertion in a Roman orgy, or just lose your mind...
■ "Eureka!" is not just an Epic — not just an Adventure. At the start of each historical era, you face an Arcade Action test, to decide your strength level for the Adventure to come.
■ The better your score, the stronger and faster you'll be.
■ And it'll keep you on your toes, with constantly-changing, static and moving graphics. Brilliant music and sound effects add to the excitement.
■ As part of the "Eureka!" pack, you receive a full-colour illustrated booklet, containing cryptic riddles and mysterious illustrations. Using booklet and screen *together*, you steadily unravel the clues and build up a secret phone number piece by piece.
■ If you're first to ring it, you save the world and collect the £25,000!
■ Quite a package! And to give everyone a fair chance, "Eureka!" will be released simultaneously worldwide on October 31st, 1984. No packs will be available until that date. All orders received by mail or phone by 26th OCTOBER will be despatched by post on the 31st right across the world. So order now, and be one of the first off the mark.

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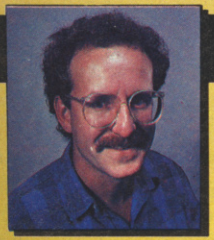
THEN THE RACE IS ON!!!



DEVISED BY IAN LIVINGSTONE

The storylines for "Eureka!" are by Ian Livingstone, whose "Fighting Fantasy" books have sold over 2,000,000 copies. He's dreamed up some rather nasty tricks and twists for you in this Epic, because he has also devised the cryptic clues and conundrums in the booklet that goes with the program. He's the one who knows the answers.

"Eureka!" was programmed by Andromeda teams led by Hungarians Donát Kiss and András Császár. It took the equivalent of 5 YEARS to create, and the skills of 4 graphic artists, 2 musicians and a professor of logic too. We told them to stretch the hardware's capabilities, and make sure you were kept awake for hours!! They've done it...

£7 BONUS

When you order "EUREKA!" before 26 OCTOBER 1984, you receive an additional bonus; £7 voucher off the price of the **TROJAN LIGHT PEN** from PSL MARKETING. Normal price is £17.75. You buy it for just £10.75.

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The race for the £25,000 starts on 31 Oct 1984 and closes on 31 Dec 1985.

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Robots on the rampage

THE ROBOTS have gone loopy in the mechanised factory far out in space. Your job as the metagalactic repair man in **Strangeloop** from Virgin Games, is to get through the rooms filled with dangerous swarf, reach the control room and shut down the crazed computer. On the way you will meet super-swarf and an anti-hero who will try to disrupt everything you do, as well as robots which will help you to patch up your space suit when it has been attacked by swarf. Virgin is giving a £2,000 robot to the first player to complete the game.

You are guided by a map on which you can see some of the 240 rooms around you and which will help you find a jet-bike.

You can pick up fuel and patches for your suit and retrieve items such as rings and spanners, which are given out by robots or left strewn around the floor. The objects can be used to perform various tasks which must be done before you stop the factory computer. For those reasons the game can be called an arcade adventure, on a par with **Jet Set Willy** and **Manic Miner.**

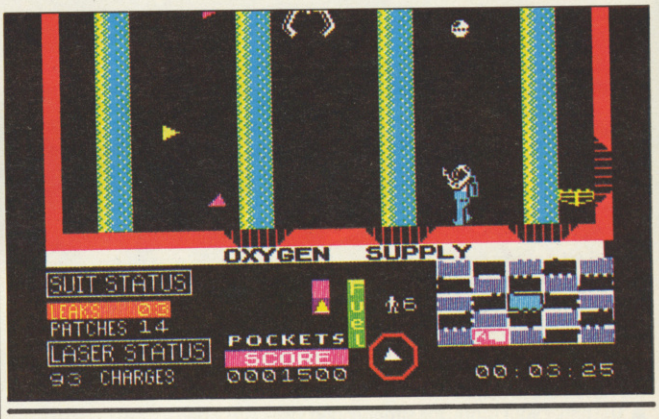
If you run into trouble you can save the state of play onto cassette and resume the game later. You can also halt all the on-screen action to take a quick break. A real-time clock tells you how many months you have spent on the game.

If you are killed off you are reincarnated, as long as you have one of your eight lives left, and may position yourself anywhere within the present room. Thus you can sacrifice a life to escape from a particularly lethal situation.

Strangeloop is more than likely to be one of the biggest selling games at Christmas and may make as large an impact on the market as any game from Software Projects or Ultimate. For the first time in its short life Virgin Games has a winner on its hands.

John Gilbert

STRANGELOOP
Memory: **48K**
Price: **£5.95**
Joystick: **Kempston, Interface 1, Sinclair, Cursor**
Gilbert Factor: **9**



War without Wells

JUST READING the instructions may have you feeling quarrelsome and irritable about **The War of the Worlds** from CRL. H G Wells does not even get a mention and the only way to find out the order of places to visit is to buy the record of the same name.

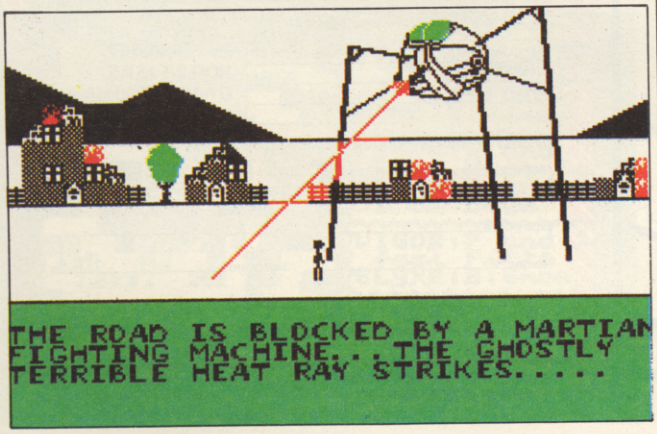
Martian fighting machines terrorize the Home Counties in this graphic 'adventure' and your aim is to guide your man, a stick-like figure, through the moving landscape.

Much of the game seems to be spent moving along the streets towards London and there is no real text input. The few text commands are single key entries such as E for eat or G for get. You will find yourself zapped frequently if you take a wrong turning, which sends you back via long delays to the teletype-style beginning.

After reaching London things get chaotic. I was swamped by refugees from the city for so many moves that I gave up in absolute annoyance as the program seemed to be stuck in an endless loop. No movement was possible after that point.

Richard Price

WAR OF THE WORLDS
Memory: **48K**
Price: **£7.95**
Joystick: **Protek, AGF, Cursor**
Gilbert Factor: **4**



Fireater flops

GOODNESS gracious, great balls of fire! Coming at you every which way too in **Dragonfire** as, in the persona of Prince William, you attempt to cross the drawbridge, enter your castle and rescue the valuables in the Treasury.

The fortress is guarded by a powerful dragon who has clearly dined too well on chicken vindaloo and the fireballs fly thick and fast. Young Willy can be made to jump, duck and run towards the gate and, if he makes it, enters the second screen. That depicts the strongroom where the flatulent reptile lurks.

Willy must then collect items of value and escape once again avoiding incineration. If successful he returns to the drawbridge and begins all over again, only this time the action is faster and yet more dangerous. There are four levels like that, each apparently using the same screens.

The game is fast, challenging, with good strong graphics and clear displays. It is pure arcade and the storyline is minimal. All you need are fast reactions and the urge to play again and again. To begin with the program is exciting and difficult but with only two screens, the thrill soon wears off. That is a serious limitation on what is basically a well-designed game and is bound to reduce its permanent appeal.

Richard Price

DRAGONFIRE
Memory: **48K**
Price: **£6.95**
Joystick: **Cheetah RAT, Kempston, Interface 2.**
Gilbert Factor: **5**

SPECTRUM 48K

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Quick on the draw

WHITE LIGHTNING is an apt name for the games development package released by Oasis Software.

The package is described by the company as "the first true sprite manipulation language". Although some would not agree with the first point, as the ISP SCOPE arrived on the scene much earlier, it has to be admitted that the package provides a powerful graphics utility language which will add a new dimension to games written by amateur programmers.

Sprites are made up of several character segments which can be moved around the screen in unison. Any one of a possible 255 sprites can be set up at any width and height you indicate. The unit of measurement for sprites is one byte and the most common size is four by four. That will produce characters similar to those which can be found on the Commodore and Atari computers.

The **White Lightning** language is compiler-based and runs Fig-Forth together with a set of commands to handle graphics, sound and input. Oasis has labelled that new sub-set of Forth 'Ideal' and it fills in the holes which the official Forth language leaves on the Spectrum.

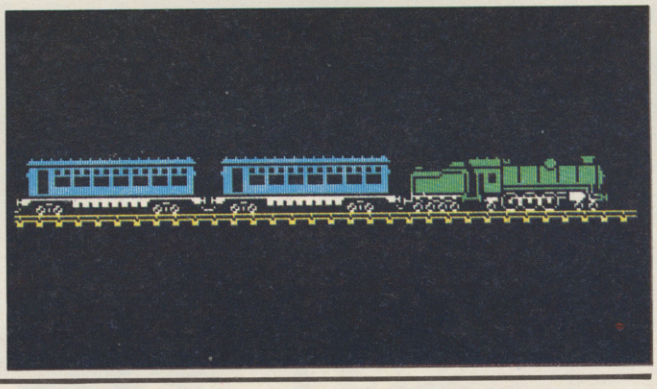
If you do not have any knowledge of that esoteric language then the 131-page booklet which accompanies the package explains all the commands in detail.

As well as being able to use Forth and Ideal you can incorporate Basic commands into programs. The reason for allowing the use of Basic keywords is that a beginner can be gradually weaned onto Forth code and off Basic. That is a commendable idea and one that works well.

Anyone who wants to write compiled games ought to buy White Lightning. It is easily the most complex games language on the market and produces stunning effects on the screen.

John Gilbert

WHITE LIGHTNING
Memory: **48K**
Price: **£14.95**
Gilbert Factor: **9**



Get past the gorilla

ENTER the domain of the two kings who rule **Twin Valley Kingdom.** Explore the forests, the mountain paths and the caverns of the land where eternal life is possible.

You will meet other creatures which may have objects, such as broadswords, which you need. Those monsters are a motley crew and include trolls and gorillas. They have a nasty habit of throwing things at you and do not behave as intelligently as Bug-Byte claims.

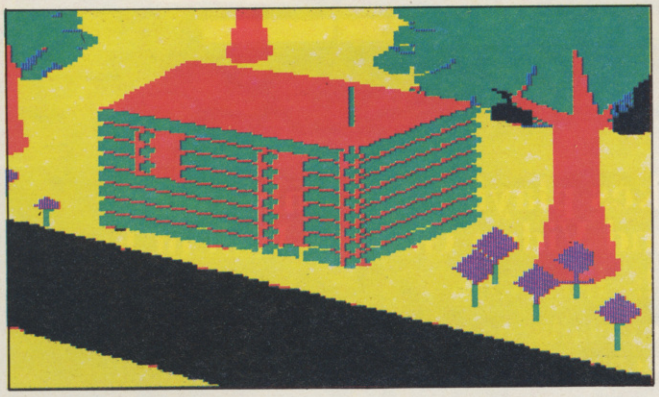
The location pictures are colourful and drawn at a speed which beats that of **The Hobbit** graphics.

There are 180 locations of which 150 have corresponding screen pictures. Bug-Byte claims that it has crammed more locations and pictures into the Spectrum than any other company. That is a matter of opinion.

Another attraction is the addition of speech if you have a Currah Microspeech unit.

The game is excellent value for money. The only criticism is that little seems to happen until you have been playing it for some time and have found some of the objects which you need. That is all part of the simulation and dedicated adventure players should not be put off.

John Gilbert



TWIN VALLEY KINGDOM
Memory: **48K**
Price: **£7.95**
Gilbert Factor: **8**

Young users' picture play

AN EARLY reading program for 3-7 year olds, **Words and Pictures** is based on the old idea of matching pictures to words. Four programs — Wordsa, Sentsa, Wordsb and Sentab — can be called from the menu. On LOADing a list of words appears for each section, and options 1-4 can be chosen; there are approximately 100 words introduced, including prepositions.

You can choose whether to include sound, and a performance table at the end of the game. Both word games operate on the same format; four pictures appear on the screen with a word at the bottom, and the object of the game is to match the word to the correct picture.

The pictures are colourful, although simplified as is the case with computer graphics. That simplification could be confusing if a child is playing the game alone, for the word 'daddy' is supposed to match a picture which could easily be confused with 'man'.

The sentence section makes quite a leap from the initial matching of single words; sentences such as 'The fir tree is always green' are a far cry from the initial matching activity. If the word matching is correct then a frog eats a bug, and when 10 bugs are eaten a song is played. If incorrect the frog leaps up and down.

The booklet provides hints for parents and teachers. Words and Pictures is an adequate first-reading program, but at £9.95 rather expensive. After all, flashcards and word cards could be made for a fraction of the price to provide identical activities, and would probably be a richer visual experience. *Theo Wood*

WORDS AND PICTURES
Memory: **48K**
Price: **£9.95**
Gilbert Factor: **6**

A COMPLETE COLOUR MICRO WITH NO HIDDEN EXTRAS FOR AROUND £499.

The title of 'genius' is not bestowed lightly on man or machine: those extraordinary qualities and powers of intellect are rare.

Einstein had them in full measure. And so now does the new micro computer from Tatung, designed and built in Britain and appropriately named – Einstein.

Einstein was created by Tatung, one of the world's leading electronic companies, and given the capacity and the remarkable capabilities to compete with computers costing far more.

Its simplicity of operation will appeal to the first time buyer and to businessmen who don't want to lose staff to expensive and time-consuming training courses. At the same time its operating system is both powerful and sophisticated to satisfy the most advanced requirements.

For those who have outgrown their existing primitive machine, the speed and capacity of the 500K built-in disc drive will make all the difference. And for the small businessman, the ability to store and retrieve all information in seconds will be as important as Einstein's built-in flexibility, which allows the system to grow as the business develops.

BUILT-IN 80K MEMORY
Total memory capacity 80K RAM divided into 64K 'user' memory and 16K for colour graphics production.

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500K 3" compact floppy disc drive. Potential for massive extra storage with a second 500K disc drive internally.

BUILT-IN 16 COLOUR GRAPHICS High resolution graphic animation from 32 sprites (definable shapes), 16 vivid colours.

BUILT-IN EXPANSION PORTS
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BUILT-IN FLEXIBILITY
Powerful Crystal BASIC. Multi-lingual plus ability to run CP/M.†

BUILT-IN VERSATILE SOUND
Sound synthesiser facility includes chromatic music with three voices. Substantial speaker with volume control. Provision for speech synthesiser.

Einstein has them all. Feature for feature, it meets the needs of the novice and the experienced operator, both at home and in the office.

Einstein, designed and built in Britain, is a complete colour micro computer with no hidden extras.

And for under £500 is sheer genius.

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Einstein
SHEER GENIUS: AT WORK, AT HOME.

DIAL 100 AND ASK FOR FREEFONE EINSTEIN FOR YOUR NEAREST STOCKIST.

†CP/M is a trade mark of Digital Research Inc.

FOR SPECTRUM 48K

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Kevin Toms

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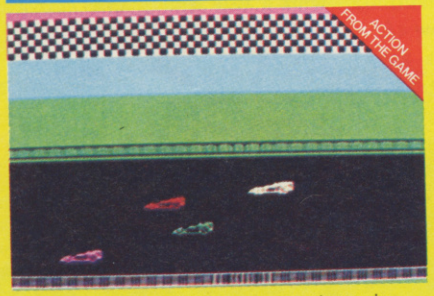

"This excellent strategy game puts you in charge of a Grand Prix team and your task is to try and win the Team Championship."
Features: Race Action ★ Driver selection ★ Racing Car Engineering ★ Mechanics ★ Finances ★ Sponsorship problems ★ Crashes etc.

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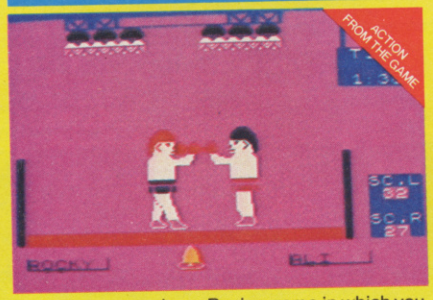
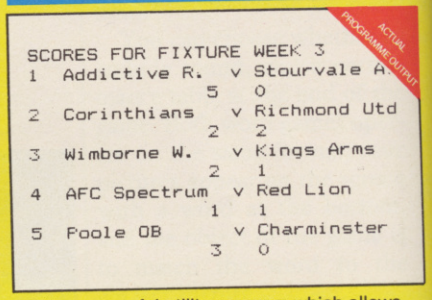


"A 2 or more player Boxing game in which you fight your oponents with excellent on screen fight action. There is even a **World Championship league** included in the game!"

RUN-YOUR-OWN -LEAGUE Requires Printer £6·95

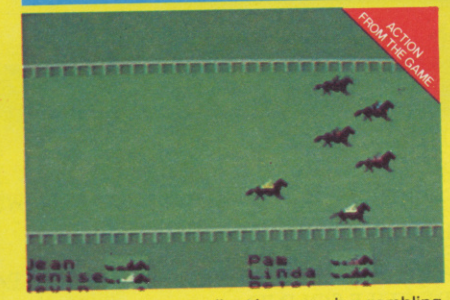


"A very useful utility program which allows anyone to run a League with ease. This professional program is designed to be used for almost any sport or game and has many features." E.g. Up to 30 teams per division ★ Match cancellation/award ★ League Tables calculated ★ Variable points systems etc. etc.

TRIO

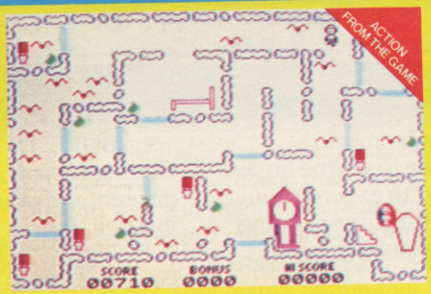
3 quality games on one cassette for just £5.95 (under £1.99 each!)

TRIO



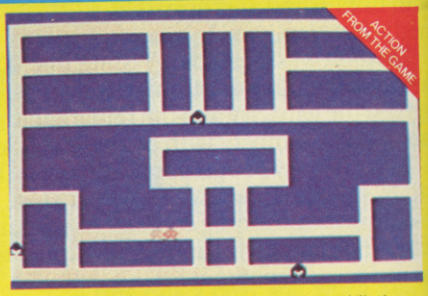
ASCOT – "an excellent horse racing gambling game with superb race graphics." Realistic odds and up to 6 players per season.

+



DRACULA'S CASTLE – "This is an amusing arcade game in which you must run around the castle to switch the lights on while avoiding the vampire bats. Beware of sleeping Dracula as lights wake him from his coffin. Can you survive till dawn!"

+



CHAOTIC CAVERNS – "A highly addictive maze chase game with 7 caverns. What really makes this game is that it requires a high degree of strategy to master it."

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Jet-propelled action

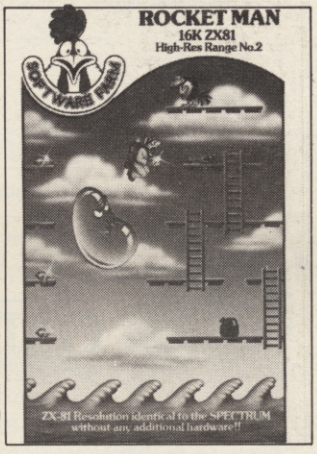
DIAMONDS is where your future lies, diamonds sitting on little platforms above a hostile sea. Why they are there nobody knows, but it is your job to get them.

Unfortunately you are some distance from the diamonds, and have to reach them by using a rocket pack which has no fuel. To obtain the fuel you must leap around a series of platforms and ladders dicing with watery death and avoiding the menacing bubble which pursues you, like something out of *The Prisoner*.

When you have enough fuel you can fly using the rocket pack, but the bubble will still chase you. It is difficult to amass the required quantity of fuel — you must judge for yourself how much you need — but the bubble seems almost unbeatable when you are flying.

At higher levels a touch of the Manic Miners sets in, as your rocket pack becomes a vulture and the fuel legs of lamb. Never mind that the vulture looks more like one of those exotic seabirds which frequently appear performing their mating dances for David Attenborough. Do not ask yourself what ready-carved legs of New Zealand's finest are doing on platforms high above the ocean. Enjoy the game, and avoid awkward questions which might threaten your sanity.

For **Rocket Man,** the second in a series of high-resolution ZX-81 games from Software Farm, is indeed worth playing. For once the high-resolution boast is true, and the game is sufficiently difficult to hold the interest while not being so impossible at the beginning as to discourage you from continuing. The game is not the fastest, but given the apparent intelligence of the deadly bubble, that is probably a blessing. You should be more concerned with working out economical routes and safe tactics for moving round the ladders and platforms than worrying about sheer speed.



Rocket Man is attractively presented and fun to play. While the scenario shows signs of an erratic rather than inspired imagination, at least there is an attempt at inventive whimsy rather than a reliance on the old standbys of laser cannon and dragon breath.

On the strength of Rocket Man, Software Farm is to be congratulated, not least for its loyalty to a machine which few professionally minded software companies are seriously considering. Since the game is the second in a series, and a series would seem to imply more than two games, we hope it will be not long before the next is released.

Rocket Man can be obtained from Software Farm, Freepost (BS 3658)A, Bristol, BS8 2YY. *Chris Bourne*

ROCKET MAN
Memory: **16K**
Price: **£5.95**
Gilbert Factor: **7**

Of mice n'bugs

MICRO-MOUSE goes debugging is the unlikely title of an arcade game in which you are a minature mouse living in the bowels of the computer. The lines of a program are continually under attack from bugs, and it is your job to keep the program free and functioning.

What you see on the screen is a few lines of Basic with some letters flashing. The flashing letters are missing and you must go to one of four bins in the corners of the screen to collect the letters and replace them in the program. The bugs, meanwhile, will carry off more letters, and if the program is sufficiently corrupted the system will crash.

The game is fun to play with a novel, if whimsical, idea. Be careful when you play lest you mistake the 'system crash' in the game for a genuine system crash — the effect looks very realistic and lasts for several seconds.

I always wondered how Sir Clive managed to cram so much into the ZX-81 at the price. Now we know — it was nothing to do with custom-built chips at all, simply exploitation of cheap mouse labour.

Chris Bourne

MICRO MOUSE GOES DE-BUGGING
Memory: **16k**
Price: **£5.95**
Gilbert Factor: **7**

Laser fare

SOME COSMIC disaster has resulted in numbers of spacemen being marooned in the inhospitable wastes of the asteroid belt. It is your task in **Space Rescue** to collect them and ferry them to their home planet.

Of course, life and arcade games are never so simple, and a meteor storm is in full progress at the time, so you must dodge or destroy the deep-space debris while locating the astronauts.

The graphics are impressively drawn, partly in high resolution, and machine-code programming ensures that the action is fast. You pilot a small craft with UFO written upon it, which must leave the mothership in search of the lost astronauts. The playing area is several times the area of the screen, so you will have to search to find the spacemen.

Once found, they must be ferried back to the mothership. Be careful as you dock, or you will crash, and lose a life. Then the scene changes to a region of space populated with space stations, where you must deposit the man, and then return to head out again for the asteroids to make another rescue.

The craft is equipped with a laser gun, which can fire in eight directions. That, coupled with the movement of the craft itself, gives six different commands, and it is a little difficult to control the ship at first on the ZX-81 keyboard. Fortunately, D Pinch has provided a wide range of keys which can be used, and it should be possible to find a configuration to suit your own personal taste.

Although the game is repetitive, it is fun to play and has four levels of skill, so if the easier levels become boring, you can increase the number of meteors in the storm to provide a new challenge.

Space Rescue can be obtained from D Pinch, 72 Norwood Crescent, Coldbrook, Barry, South Glamorgan.

Chris Bourne

SPACE RESCUE
Memory: **16K**
Price: **£2.99**
Gilbert Factor: **7**

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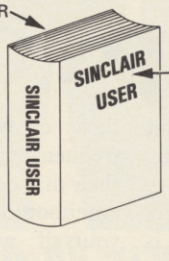

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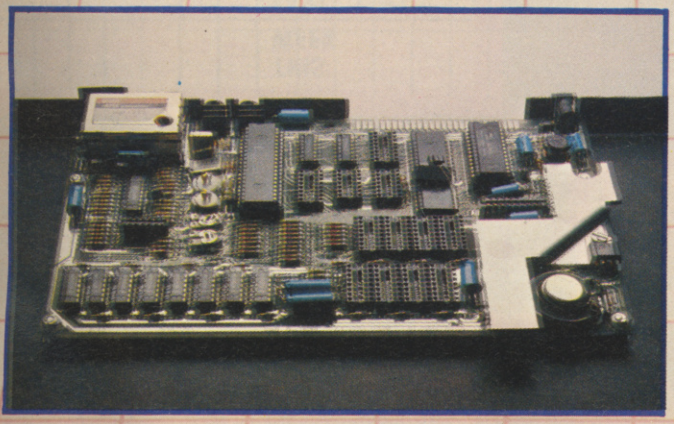

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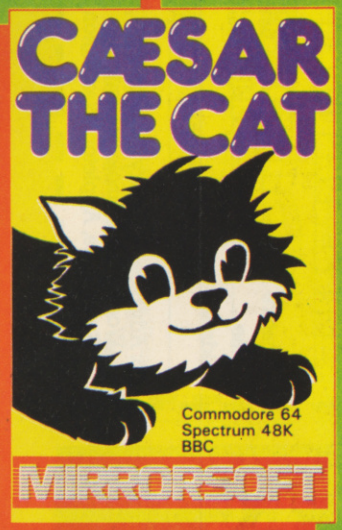
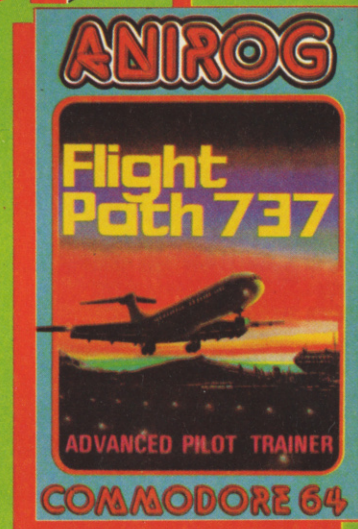
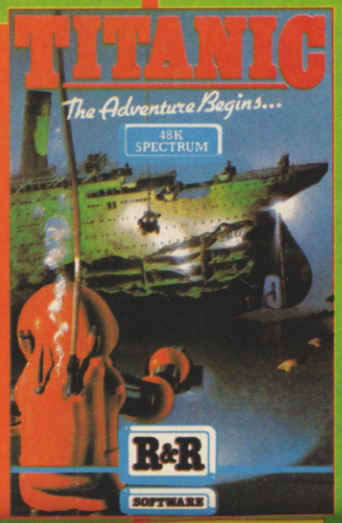
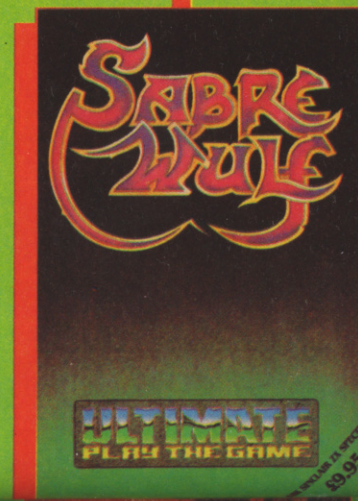


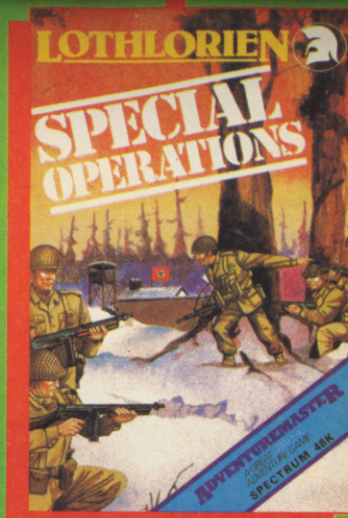


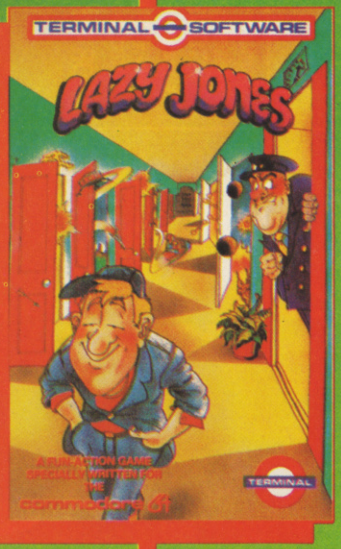


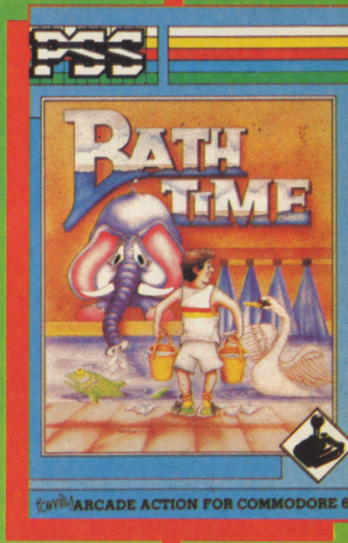


THIS WEEK	LAST WEEK	WEEKS IN CHART	TITLE	Publisher	Computer	(Available on) SPECTRUM	VIC 20	CMMDRE 64	ELECTRON	ATARI	DRAGON	ORIC	BBC	OTHER
1	9	2	DALEY THOMPSON'S DECATHLON	OCEAN	Commodore 64	●		●						
2	2	5	FULL THROTTLE	MICROMEGA	Spectrum	●								
3	–	1	MONTY MOLE	GREMLIN GRAPHICS	Spectrum	●		●						
4	4	7	BEACH HEAD	ACCESS/U.S. GOLD	Commodore 64			●						
5	5	13	JET SET WILLY	SOFTWARE PROJECTS	Spectrum	●								
6	3	3	DECATHLON	ACTIVISION	Commodore 64	●		●						
7	11	3	MICRO OLYMPICS	DATA BASE/MICRO USER	Spectrum	●		●					●	
11	6	7	LORDS OF MIDNIGHT	BEYOND	Spectrum	●								
12	20	8	JACK & THE BEANSTALK	THOR	Spectrum	●								

7	11	3	MICRO OLYMPICS DATA BASE/MICRO USER	Spectrum	●		●					●	
8	7	6	TORNADO LOW LEVEL VORTEX	Spectrum	●								
11	6	7	LORDS OF MIDNIGHT BEYOND	Spectrum	●								
12	20	8	JACK & THE BEANSTALK THOR	Spectrum	●								
13	19	8	PSYTRON BEYOND	Spectrum	●								
14	8	4	MATCH POINT PSION	Spectrum	●								
15	–	1	VALHALLA LEGEND	Commodore 64	●		●						
16	22	11	TRASHMAN NEW GENERATION	Spectrum	●		●						
17	23	2	FLIGHT PATH 737 ANIROG	Commodore 64		●	●						
18	17	14	FIGHTER PILOT DIGITAL INTEGRATION	Spectrum	●								
19	–	1	WAR OF THE WORLDS C.R.L.	Spectrum	●								
20	27	3	WORLD CUP FOOTBALL ARTIC	Spectrum	●								
20	–	1	OLYMPICON MITECH	Spectrum	●								
22	28	14	ATIC ATAC ULTIMATE	Spectrum	●								
23	13	12	CODE NAME MAT MICROMEGA	Spectrum	●								●
24	–	1	FRAK AARDVARK	BBC								●	
25	–	1	DALEY THOMPSON'S DECATHLON OCEAN	Spectrum	●		●						
26	–	1	3D MAZE MASTERTRONICS	Vic 20		●							
27	–	1	FLIGHT PATH 737 ANIROG	Vic 20			●						
28	–	1	GNASHER MASTERTRONICS	Spectrum	●								
29	–	1	SON OF BLAGGER ALLIGATA	Commodore 64			●					●	
30	30	2	BLAGGER ALLIGATA	Commodore 64			●	●				●	●







Look out for the brand new 'Top 10' in the Saturday edition of the DAILY MIRROR, every fortnight.
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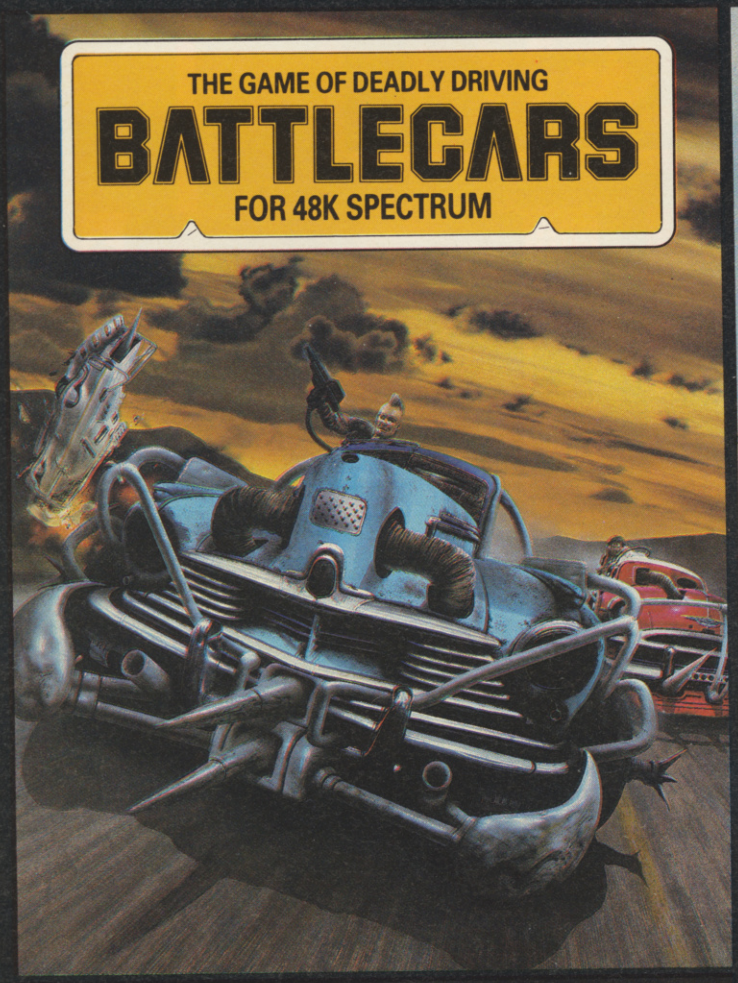
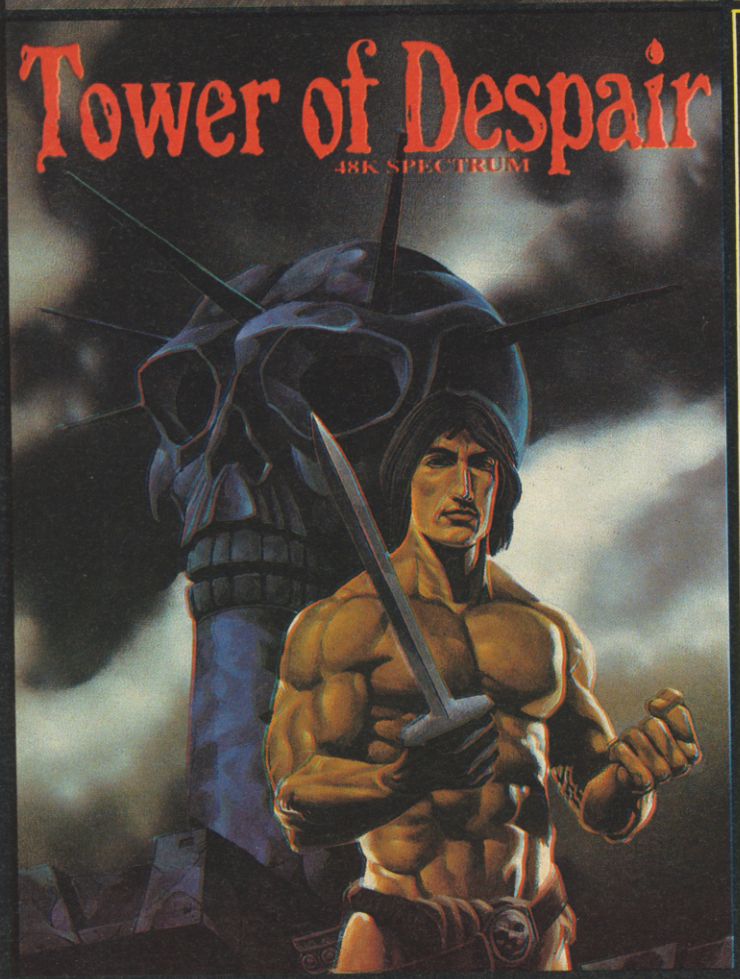
The New Force in Software





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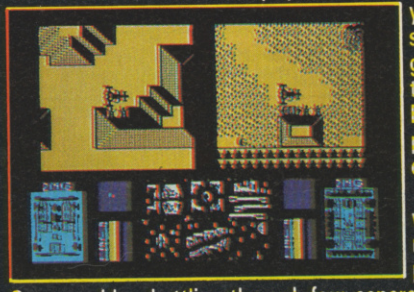

D-DAY is a superb graphic wargame based on the Normandy landings of 1944. Two players take the Allied and German sides, battling through four seperate scenarios. D-DAY offers an enduring tactical challenge to players tired of simple arcade action.

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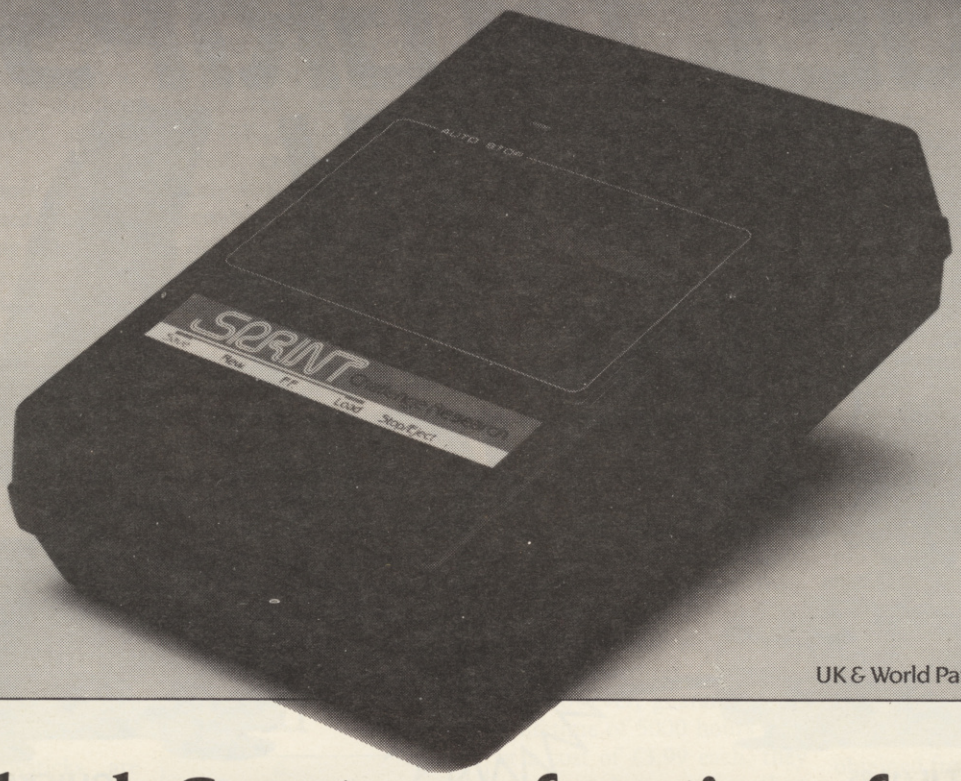

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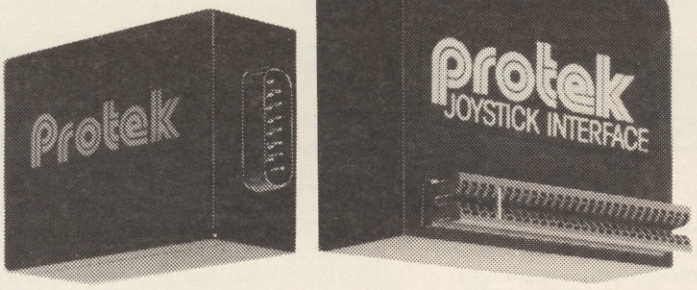

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Wafadrive v microdrive

THE ROTRONICS Wafadrive is likely to be the main competition to the Sinclair Interface One and microdrives.

The unit is more compact and better designed than Sinclair's, containing both RS-232 and Centronics printer interfaces as standard.

The power for the drives is taken from the Spectrum user port and fed through a ribbon connector which is fitted onto the base of the Wafadrive. That connection could be a disadvantage as it limits the range of other peripherals that can be put onto the user port at the rear of the drive unit.

The large manual supplied with the drive shows that the storage medium contained within the cartridges can have 16K, 64K or 123K formatted capacity, approximately 40K more than a ZX Microdrive.

Before use a tape cartridge has to be FORMATted. Once that has been done the drive will display drive name, wafer name, list of files, type of code, size of each file and how much space is left on the wafer.

Once SAVEd, programs are easily LOADed . The drive is slower than a microdrive but faster than cassette. It is also more reliable than the Sinclair storage unit and all Basic programs run after

LOADing from it ran first time.

Backing up programs is easy with the Rotronics unit. Code can be copied from drive A to drive B using the system software supplied by the manufacturer. Cartridges are, however, guaranteed for a lifetime of 5000 hours and, at a cost of £3.99 each, they represent better value than the Sinclair cartridges.

One small criticism of the drives concerns the printer interfaces which use push-on connectors. It is possible that they might wear quickly if maltreated and that normal plugs might have been better. The Wafadrive is sold with two manuals, two free wafers, a word processor package together with an extra manual describing its use.

It costs £129.00 and can be obtained from Rotronics Ltd, Santosh House, Marlborough Trading Estate, West Wycombe Road, High Wycombe, Bucks, HP11 2LB.

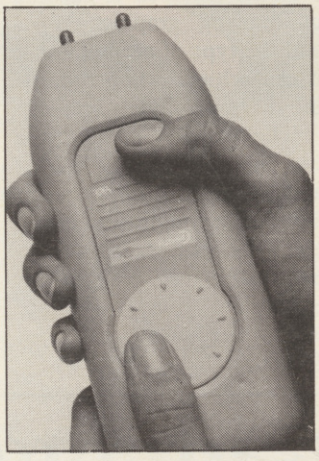
The RAT sees red

Conventional joysticks are dead! claims Cheetah Marketing, unleashing the RAT upon an unsuspecting public. The RAT — Remote Action Transmitter — is a joystick with a difference, remote controlled, working up to 15 feet from the receiver unit.

The receiver unit has a user port connector and a rear edge connector for other add-ons. The unit picks up infra-red beams from the hand set, which is touch sensitive and similar to TV remote control. The handset has two touch pads which work in a similar manner to the ZX-81 keyboard. In the base is a compartment which takes a PP3 battery. The RAT is operated by pointing its nose at the screen and pressing its pads.

The RAT was tried on several games, and was found to be hard on the hands because of the pressure needed to push the pads.

When used on TVs with a remote control facility the RAT changed channels constantly without controlling the objects on the screen. Cheetah assures us that this bug has now been eliminated.



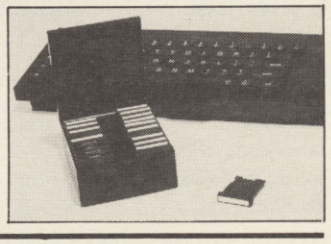
On other TVs and monitors the RAT worked well.

Retailing at £29.95, the RAT can be run to ground in High Street chain stores and computer shops.

Keeping track of your microdrive cartridges

STORING microdrive cartridges has, up to now, been a problem but the new Cartridge Box from Transform should solve it. Made to match the Spectrum and QL, the flip top box will house 20 cartridges and has space to hold record cards in the middle. Any number of boxes can be slotted together.

Priced at £5.95 the boxes are available from Transform Ltd, 41 Keats House, Porchester Mead, Beckenham, Kent. Tel: 01-658 6350.



Resetting without tears

FROM Computer World comes a reset switch for the Spectrum which does not involve opening up your computer, and thus does not invalidate the guarantee.

The switch avoids constantly removing the power lead when resetting the Spectrum, although putting the switch on top of the case would have been better, as you must hold the case each time the switch is pushed. Instead there is a light emitting diode (LED) on the top to tell you the power is on.

The main reason for having this type of outside reset switch is to save your power socket and plug from all the wear and tear it would receive in normal use.

Priced at £4.99, the switch is available from Computer World, 208 Kent House Road, Beckenham, Kent BR3 1JN. Tel: 01-778 0479.

more hardware on page 44

Striking a light

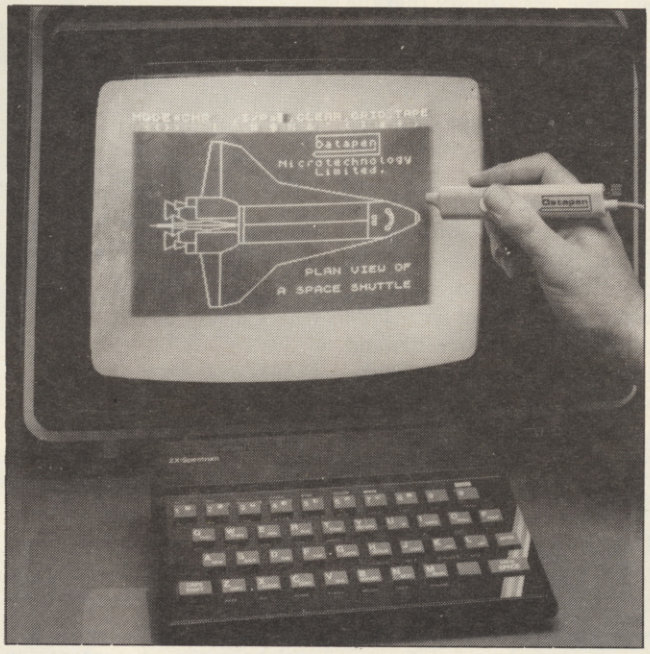
THE DATAPEN, from Datapen Microtechnology Limited, is completely self-contained, all interface electronics being stored within the main body of the light pen.

A light pen is an input device which can be used instead of the keyboard. By using it to point to areas on the screen changes can be made to a display such as option menus. A pen can also be used to draw pictures on the screen and saves time when trying to produce accurate screen diagrams.

The manual supplied with the Datapen is technical in some parts but the information provided should allow most people to get to grips with it. It explains that if you want to use the pen in your own programs you will have to know something about machine code.

One problem found when fitting the light pen was that the interface is dead ended. That means that you will not be able to add other peripherals onto the back of it.

The Datapen is different from other light pens as it incorporates a switch which enables you to use the pen without having to look at the keyboard for guidance. There is also an indicator which when lit tells you that the pen is looking at a light area of the screen and when unlit it is pointing at a dark area.



There are several programs supplied with the instrument the first of which gives an introduction to the mechanics of the pen and how to use it. The other programs show how the Datapen is capable of drawing graphic shapes and the type of accuracy that it can achieve when producing diagrams on the screen.

The Datapen is one of the best light pens on the market and we suggest you check it out before buying anything else. It is available from Datapen Microtechnology Ltd, Kingsclere Road, Overton, Hampshire, RG25 3JB for £29.00.

Micro cable

AN ALTERNATIVE to the Sinclair Research microdrive extension cable has been brought out by dk'tronics.

The cable is much the same as the Sinclair one and is about eight inches long with a connector plug on each end and a key which will stop you from plugging it into the wrong end of the interface or microdrive.

The dk'tronics interface cable is much longer than the one from Sinclair and that helps to reduce the cluttering up of space around the Spectrum keyboard. The cable costs £5.95 and can be obtained from dk'tronics, Unit Six, Shire Hill Industrial Estate, Saffron Walden, Essex, CB11 3AQ.

Competition Zipstick

The new Zipstick from Cookridge Computer Supplies, is a competition-style joystick designed for a long life of furious action. It is compatible with all standard interfaces, such as Kempston and Sinclair, and has the D-type plug on it.

Standing seven inches tall the unit has several good features — rubber feet to stop it sliding and two separate fire buttons, one of which is a bar, while the other is on top of the stick. Made out of ABS high impact plastic with stainless steel springs, it is a good looking, easy to use, joystick and is guaranteed for two years.

Priced at £12.95 inc. p&p, the Zipstick is available from Cookridge Computer Supplies, PO Box 1W9, Leeds LS16 6NT.

Teletext adaptor

NEW from OEL is the TTX 2000 teletext adaptor for the Spectrum.

The unit is a decoder allowing you to look at and print out hundreds of pages of information transmitted free with the normal television broadcasts, but usually invisible because teletext is at the top of the screen. The service is free to those with a decoder, normally fitted inside a TV. A TV-type decoder uses a remote key pad whereas the TTX 2000 uses the Spectrum keyboard to access the information.

Teletext is up to the minute information on many different subjects; sport, news, weather, stock prices and even some computer games are included. Both the BBC and ITV transmit teletext, called Ceefax and Oracle respectively. All the channels offer comprehensive indexes, so making it quick and easy to find information. The advantage the TTX 2000 has over normal teletext televisions is its ability to save to tape or microdrive as a screen or to a printer.

Supplied with the decoder are an 18 volt power supply, a manual and a three-way connector lead. All that is then required is a strong television signal.

It costs £143.75 which represents good value and is less expensive than buying a teletext set. It can be obtained from OEL North Pint, Gilwilly Industrial Estate, Penrith, Cumbria, CA11 9BN.

THE AGE OF THE R.A.T

Patent Pending

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*The Cheetah **R**emote **A**ction **T**ransmitter is the most sophisticated computer controller available.*

It has these features:

- *Infra Red transmission – so there are no leads trailing across the living room. Just sit back in your chair up to 30 feet from your machine.*
- *Touch control – no moving parts, extremely fast, long life.*
- *No extra software required.*
- *Can be used with all Cheetah RAT/Kempston compatible software.*
- *Fits comfortably in your hand for long play periods.*
- *Comes complete with receiver/interface unit which simply plugs into the rear of your Spectrum.*
- *Compatible with all Sinclair/Cheetah peripherals via the rear edge connector.*

Simply incredible at £29.95 including VAT and p&p.

Dealer enquiries welcome. Export orders at no extra cost.

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John Menzies Boots WHSMITH Rumbelows
and all good computer shops.

Cheetah Marketing

NOT JUST A PRETTY Inter FACE!

This superb new interface is one of our very latest developments for your Spectrum.
Offering even more features, and as it's programmable from the keyboard or with the cassette supplied you can now use it with any software.

Features include:-

- 17 directional movement
- Keyboard fully functional
- Rear connector for other add-ons
- Microdrive compatible

ONLY £22.95

NOT JUST A PRETTY Inter FACE!

The Spectrum dual port joystick interface is a highly versatile and price competitive joystick interface offering two joysiick ports.
The first port simulates 6,7,8,9, & 0 keys. The second port simulates in (31) command.
The ports will accept any Atari style joystick.
It will run any software. That is:-

- Using keys 6,7,8,9 & 0.
- Having redefinable key functions.
- Using in (31) (i.e. Kempston).

ONLY £13.00

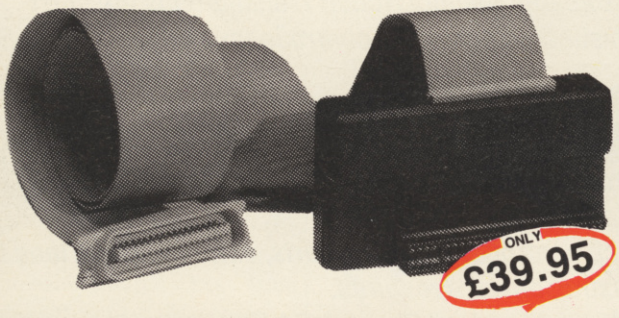
NOT JUST A PRETTY Inter FACE!

The new dk'tronics Parallel Centronics Interface will link your Spectrum to any printer with a standard centronics input. As the choice is vast, you can select the printer exactly suited to your needs.

Features of the Interface include:

- Runs all parallel centronics type printers
- Controlling software fully relocatable
- Interfaces with any software using the printer channel e.g. Tasword Dev pack etc.
- LLIST LPRINT recognised. High res screen dumps
- All control codes allowed through to printer
- Fully microdrive compatible
- Supplied with full instructions and controlling software

All dk'tronics products are covered by a comprehensive guarantee.



ONLY £39.95

NOT JUST A PRETTY Inter FACE!

Our new generation light pen and interface is designed specifically for your Spectrum and works down to pixel level for complete accuracy.
Now you can produce high resolution illustrations with the 16 pre-defined instructions, selected from the screen controlled menu. Change colour, border, paper, ink. Draw circles, arcs, boxes or lines. You can fill in objects with colour, insert text or draw freehand, save and load completed or partially completed screens onto and from a tape and with a 48K Spectrum retain screens in memory and animate.
You can also use the machine codes in your own programmes for selecting from a menu, playing games etc. (all entry points supplied).
The interface fits neatly into position and comes complete with software cassette.

ONLY £19.95

Please rush me the following:

.....Programmable Interface(s) ..... £_____
.....Dual Port Interface(s)..... £_____
.....Parallel Centronics Interface(s)..... £_____
.....Light Pen and Interface(s)..... £_____

Please add post and packing..... £ 1.25
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Or send S.A.E. for the New D.K.Tronics Spectrum Catalogue SU/11/84

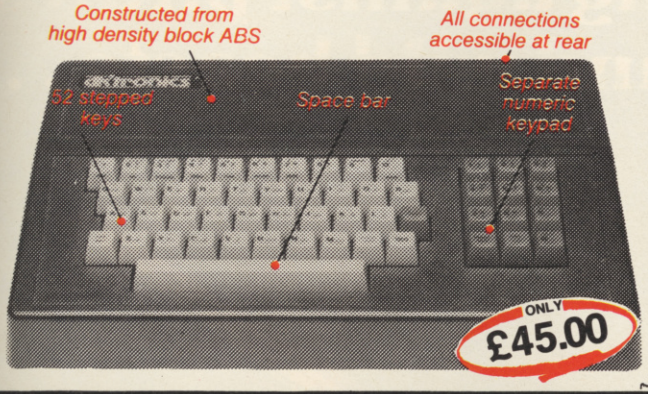
dk'tronics

DK Tronics Ltd., Unit 6, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AQ. Telephone: (0799) 26350 (24 hrs) 5 lines

The Spectrum Connection

THE FINAL TOUCH

We've just added the final touch to our professional keyboard.
This new Microdrive compatible keyboard offers more key functions than any other in its price range. And the stepped keys and space bar make it even easier to use. Our keyboard, constructed from high density black ABS, will take your Spectrum into the professional league.
It has 52 "stepped" keys plus space bar. A separate numeric key pad consisting of 12 red keys including a single entry 'delete' plus single entry 'decimal point', facilitate fast numeric data entry.
The 15" x 9" x 3" case will accommodate your Spectrum and other addons like interface 1, power supply etc. and forms an attractive self-contained unit.
All connections, power, Mic, Ear, T.V., network RS232 and expansion port are accessible at the rear.
A few minutes, a screwdriver and the simple instructions supplied are all you need to fit your Spectrum.
All dk'tronics products are covered by a comprehensive guarantee.



FOLLOW OUR LEAD FOR THE RIGHT CONNECTIONS

MICRO DRIVE EXTENSION LEAD

This is an 8" version of the micro 16 way drive lead. Sinclair's lead is only 4" long and for many applications this may not be long enough. It enables you to space the micro drive much further away from Interface I.

56 WAY RIBBON CONNECTOR

This is an extension cable that enables Spectrum peripherals to be distanced from the computer.
It is supplied 9" in length and will allow male or female connections to be made to the computer.
The connector has special lugs to enable easy fitting/removal from the computer's expansion port.

WINNING IS WITHIN YOUR GRASP

Quickshot Joystick I
- Super positive response
- 2 fire buttons
- Stabilising suction caps
- 4ft lead

Quickshot Joystick II
Incorporating all the features of 'Quickshot I' plus
- Improved control grip
- Trigger fire button
- Rapid fire option

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Three Channel Sound Synthesiser interface incorporates a BEEP audio amplifier and a 3 channel sound sythesiser.
The BEEP amplifier improves the sound quality and output of the BEEP enormously. The 3 channel sound synthesiser adds a totally new dimension to sound on your Spectrum. It allows you to program your own music with harmonies, explosions, zaps, chimes, whistles and an infinite range of other sounds over a full 8 octaves. Based around the popular AY-3-8912 sound chip it gives you complete control (from basic or M/C) over 3 channels of tone and/or white noise, plus envelope and volume control. It comes with it's own pod mounted (4") speaker with 1 metre of cable so that it can be positioned anywhere.
Once this is fitted to the expansion port your programmes will never sound the same again!

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Microdrive Compatible Keyboard(s)	£_____
Microdrive Extension Lead(s)	£_____
56 Way Ribbon Connector(s)	£_____
Quickshot Joystick(s) I	£_____
Quickshot Joystick(s) II	£_____
Three Channel Sound Synthesiser	£_____
Please add post and packing	£ 1.25
I enclose cheque/PO/Cash for	Total £_____

or debit my Access/Barclaycard No. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

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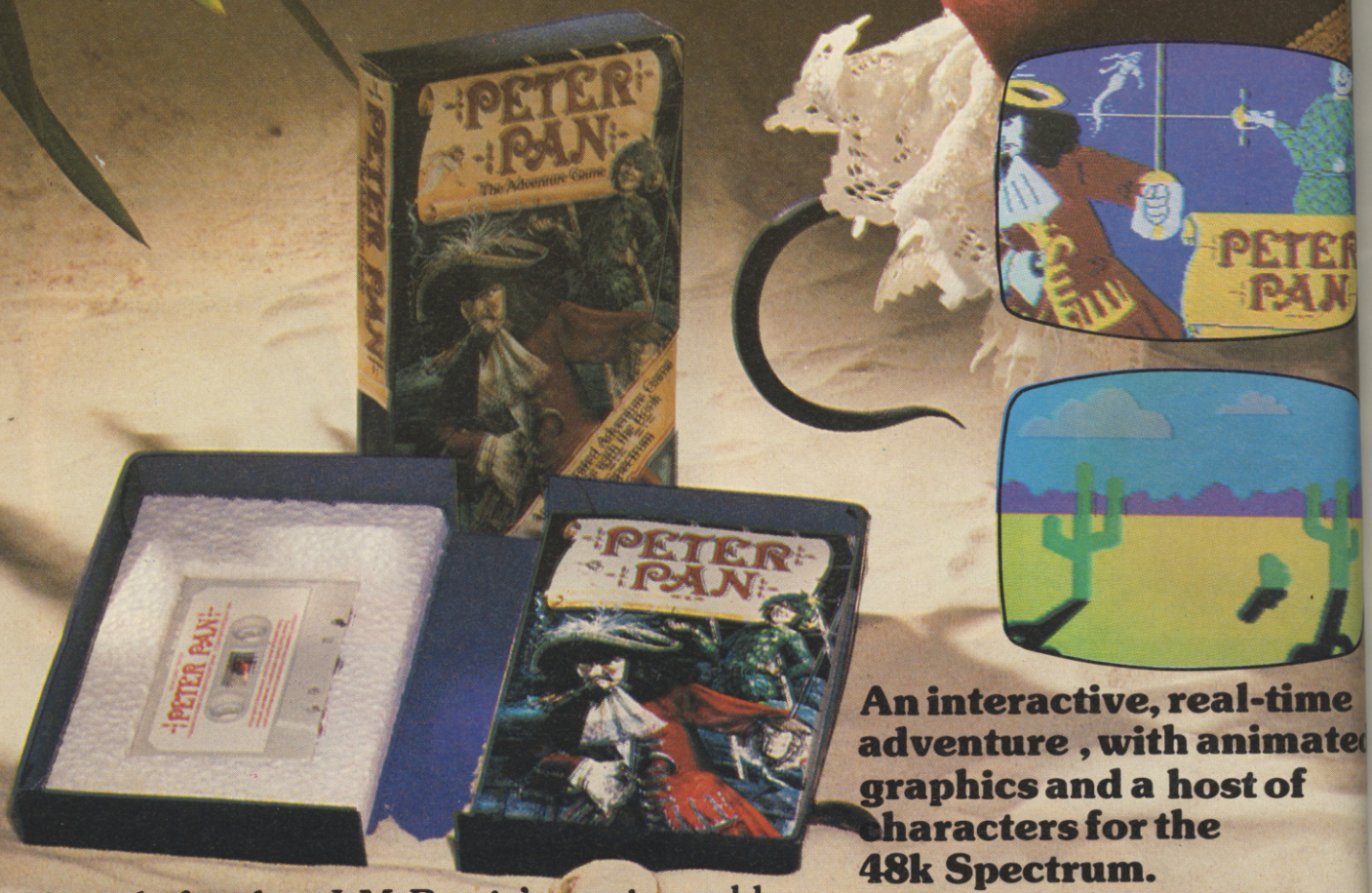
The Spectrum Connection

If you think that dragons wizards and warlords are dangerous, test your skil and daring against pirates Indians and wild beasts . .



An interactive, real-time adventure , with animate graphics and a host of characters for the 48k Spectrum.

Never before has J. M. Barrie's magic world of the Neverland been so real. PETER PAN – The Adventure Game takes you to the realms of pirates, lost boys, Indians, wild beasts and Captain Hook. Explore the Island, fight the pirates, save Tiger Lily and, if you are really fearless, destroy Hook and steal his ship, to return Wendy and the boys safely home again.

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Chronic hardware headaches?
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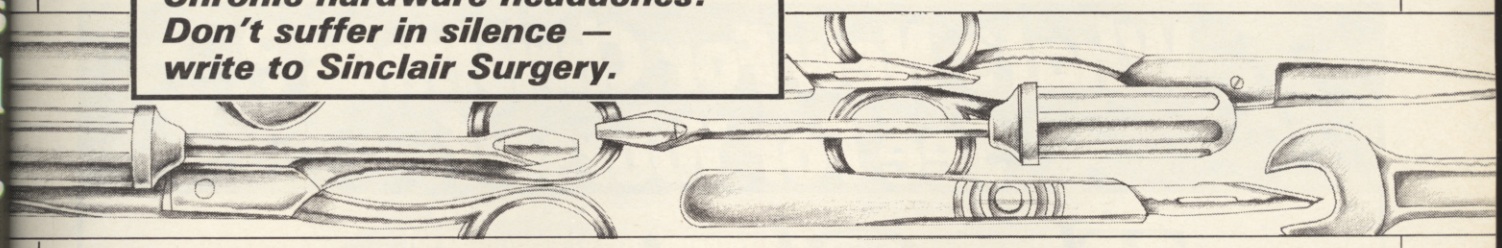

Fading printouts

COULD you inform me why Alpacom printer paper always fades even if covered in cellophane folders?

Another point of contention is the new blue paper clogs the unit, as does the new black paper.

G W Harrison, Kettering.

● *A spokesperson for Dean Electronics, makers of the Alphacom 32, said that the paper will fade but should last for up to two years if kept out of the light. It was suggested that any listings that you wanted to keep should be photocopied, but again those are liable to fade. That would appear to be a major drawback of the printer and should be kept in mind by prospective purchasers.*

Regarding the clogging of the printer, the spokesperson said that should not happen and any complaints would be dealt with by the Product Manager. Let us know how you get on.

Screaming RAM packs

MY GRANDSON has bought a 16K RAM pack for his ZX-81. When it is attached he cannot run the programs he has typed in. When loading from cassette he gets only a high-pitched scream. He has taken one RAM pack back but the replacement is doing exactly the same.

Mrs J Armitage, Bury, Lancashire.

● *The ZX-81 is well known for its cassette problems but in this case matters seem to have got out of hand. Attaching a RAM pack should not affect the operation of the cassette so something else must be at fault.*

The high-pitched scream is usually an indication that when the program was SAVEd the ear lead was still connected — that should be removed. Other than that, cleaning and aligning the heads usually helps. If that fails then take the computer and cassette to the shop where you bought the RAM pack and try all the stock until you find one that works.

Fitting modems

I HAVE an Interface One and Microdrive, and my Spectrum is fitted inside a Saga keyboard. Can I fit a VTX 5000 modem via the Interface 1?

Mr A R Gardiner, Rhyl, Clwyd.

● *The VTX 5000 Modem was designed to work with Interface 1 so that should not present any problems. However as the Saga keyboard is larger than the Spectrum the front will need to be supported.*

Changing characters

I HAVE bought a Sinclair Interface 2 and have discovered that very few games can be used with it. Is there any way to change the characters, used to control the joystick, to a Kempston or Protek joystick interface?

Chris Bowler, Derby.

● *There is no way to change the characters used by the Interface 2. Your only alternative is to buy a programmable joystick, such as those from AGF or Cambridge Computing, which works on most programs. When buying, always ask for a demonstration to make sure the product does what you want it to.*

Limiting memory

I HAVE recently fitted a new keyboard to my ZX-81 and a curious fault has developed. Although my 16K RAM pack is attached, running the program: 10 DIM A (4000) produces error report code 4 — out of memory.

The above led me to believe my RAM pack was malfunctioning by limiting the amount of memory available. That was not so; large programs work normally, as do any other programs.

D Williams, Bradford, W Yorkshire.

● *The problem possibly lies within the ULA, though you could try changing the CPU (IC3) as that sometimes causes the fault. I am assuming that you do not have RAM pack wobble, though if you are unsure you could buy a ribbon cable from a computer shop.*

Failing keyboards

CERTAIN keys on my Spectrum no longer work — I, Q, A and Caps Shift, and also O, P, Enter and Break/Space. All other keys are functioning.

Stephen Neal, Liverpool.

● *There must be a break in one of the ribbon cables that connects your keyboard to the circuit board. The keys are laid out in eight half rows of five keys — see chapter 23 of the manual — using five data lines and eight address lines. It is one of those address lines which is not connected.*

If you separate carefully the two halves of the Spectrum case and look at the cable with eight wires in it then you may be able to spot where the break is. If you cannot then I am afraid you will have to get a new keyboard matrix. Those are available from a number of sources quite cheaply — you might of course consider getting a full-size keyboard.

Heating problems

I HAVE had a Spectrum 48K for about 18 months. It is the second machine I have had — the first one was returned because after it had been in use for about 45 minutes it ceased to accept information, and I was told that it was probably overheating.

The replacement machine, however, was little different, and I wonder if the power pack is giving out excess current and causing this defect.

J Wallis, Bridport.

● *All Spectrums give out a fair amount of heat and that is nothing to worry about. However if it keeps crashing for no apparent reason then your only course of action is to get it repaired.*

Networking Spectrums

IS IT possible for two microdrives to interchange programs with each other, and is an Interface 1 needed for networking two Spectrums?

Carl Williams, Wallasey, Merseyside.

● *The only way for two microdrives to communicate is via the Spectrum. If you have information in drive one that you want to transfer to drive two then it must be LOADed into the computer and then SAVEd. To network two Spectrums both must be fitted with an Interface 1.*

What's New For Christmas? See For Yourself

The Christmas ZX MICROFAIR

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And you'll have a fantastic day out . . . meeting friendly people . . . having fun . . . full of Christmas cheer!

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Explore the world of Sinclair

Sinclair User, the mohthly magazine, will ensure that all ZX81, Spectrum and QL users get the most from their computers.

Every month we include exciting games programs, reviews on the latest software, bench tests on hardware and peripherals, as well as technical advice and development news on Sinclair products.

Sinclair User interviews key people within Sinclair Research, authors of top selling games plus regular features on the developments in the fast moving computer industry.

We cover all aspects of Sinclair, for beginners to enthusiasts right through to business users — Sinclair User will keep you informed. So, don't miss out — place an order with your newsagent or complete and return the coupon below and we will ensure that your personal monthly issue is sent to you direct.

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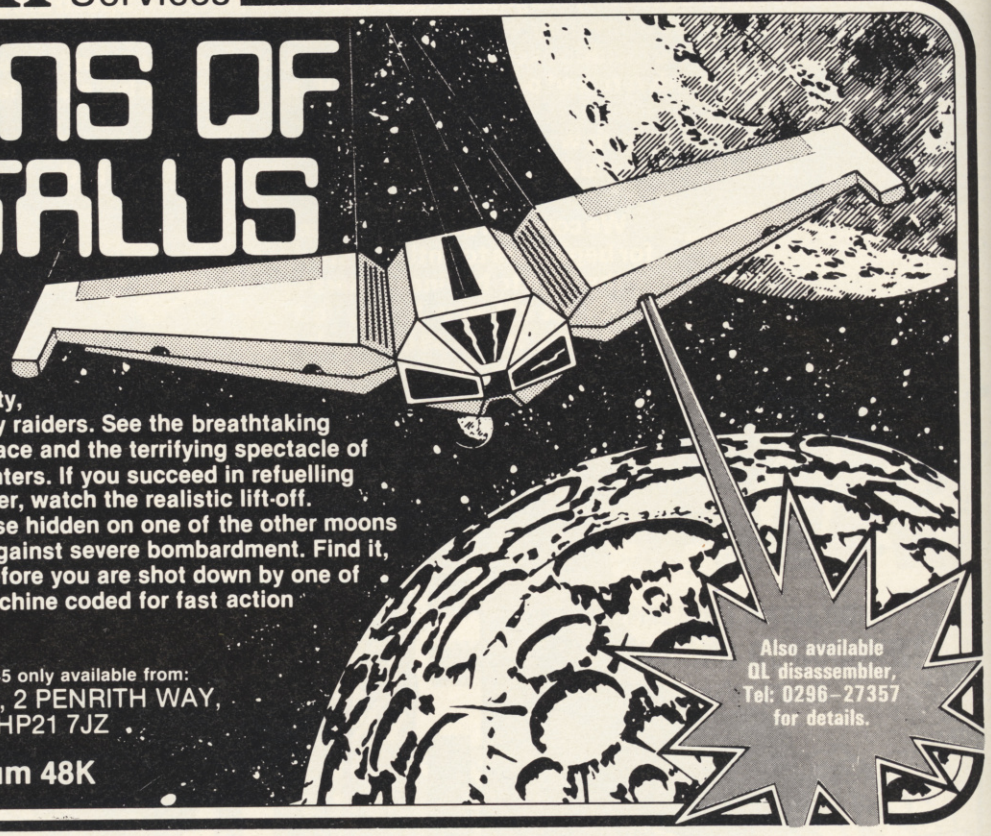
MOONS OF TANTALUS



This exciting three part adventure game takes place among the Moons of Tantalus. Only you are left to save the mining city, its defences destroyed by raiders. See the breathtaking views of the moon's surface and the terrifying spectacle of the attacking enemy fighters. If you succeed in refuelling the only surviving freighter, watch the realistic lift-off. Search for the enemy base hidden on one of the other moons as you defend yourself against severe bombardment. Find it, but can you destroy it before you are shot down by one of their missiles? 100% machine coded for fast action and superb graphics.

This fantastic game, price £6.45 only available from:
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ZX Spectrum 48K

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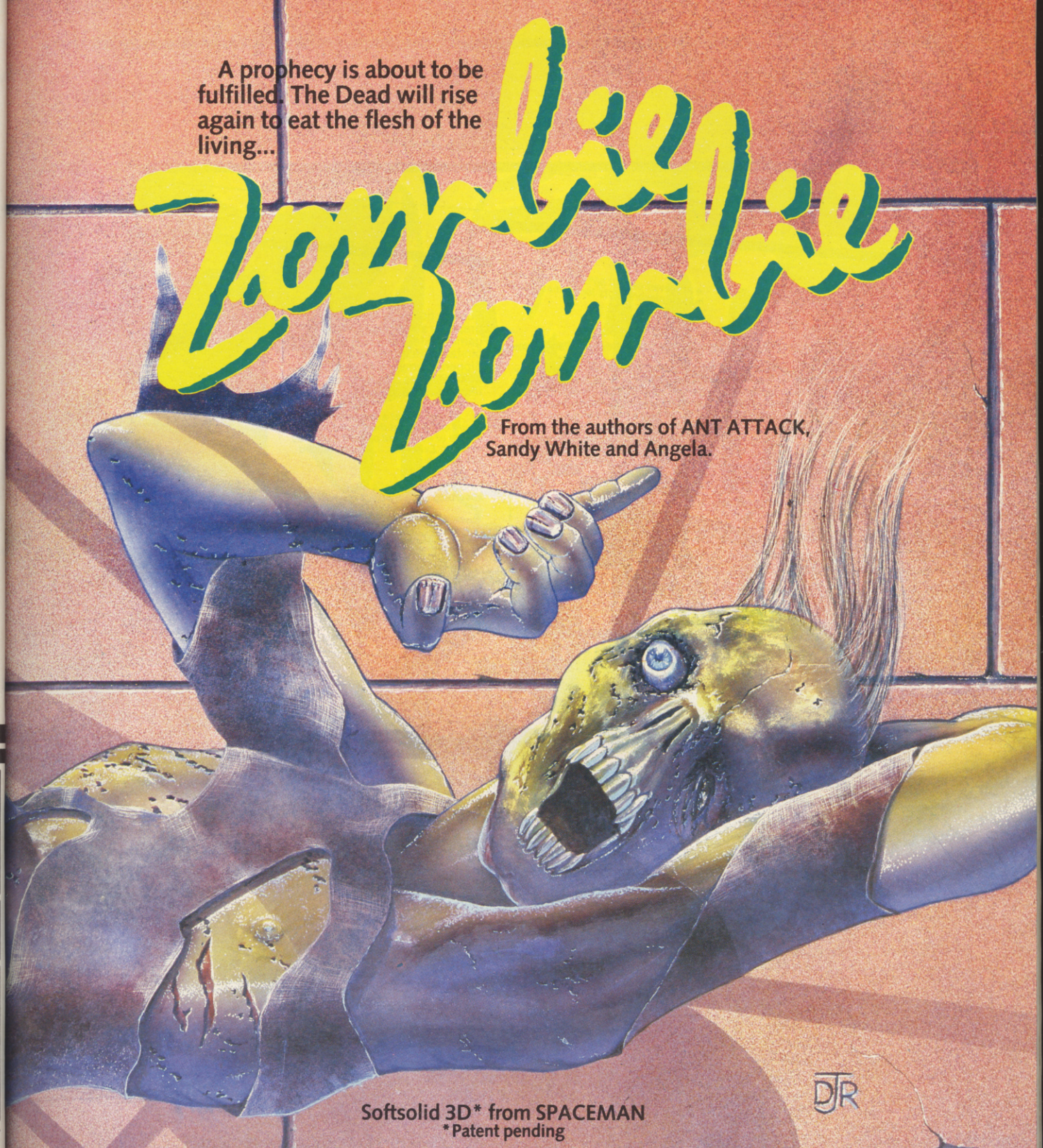
A prophecy is about to be fulfilled. The Dead will rise again to eat the flesh of the living...
Zombie Zombie
From the authors of ANT ATTACK, Sandy White and Angela.
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ABSOLUTELY GUARANTEED ABLE TO CONSISTENTLY BEAT ALL OTHER SPECTRUM CHESS PROGRAMS

★ *Declared 'Champion of Champions' by Computer Choice Magazine Chess Championship (May 1984)*

★ *Achieved overall 50% against graded human players at its local Chess Club!*

Superchess 3.0 has been developed to bring you the strongest chess program yet for the Spectrum computer.

At the tournament level Superchess 3.0 has a look-ahead of five to seven ply (moves) in the middle game, and ten to twelve ply in the end game. This gives Superchess 3.0 a substantial advantage against other chess programs and promises the experienced player an interesting and challenging game of chess.

Unlike other chess programs, Superchess 3.0 is not just a brute-force calculator, but employs artificial intelligence techniques to allow deeper searching along the main lines of play.

FEATURES:

- 10 levels—all play within tournament time limits.
- First level made especially easy for beginners.
- Easy to use—help menus provided.
- Recommended move option.
- Change sides and level during game.
- Self play mode.
- Set up/change position.
- Technical information—how the program 'thinks'.
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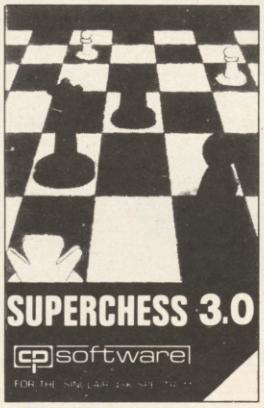

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BUG-BYTE

Night moves

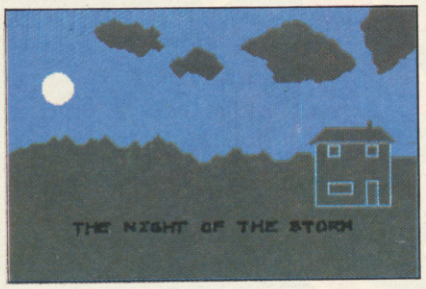
Mike Rapps brews up a midnight storm using machine code animation

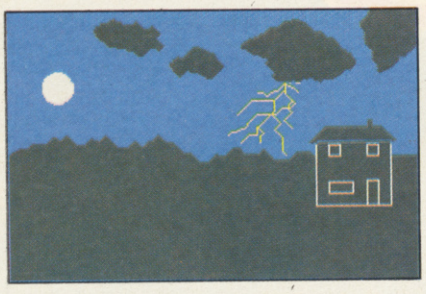
IN THE August issue of *Sinclair User* we investigated simple machine code routines to store and recall, virtually instantaneously, a number of different screens of graphic information to produce simulated animation.

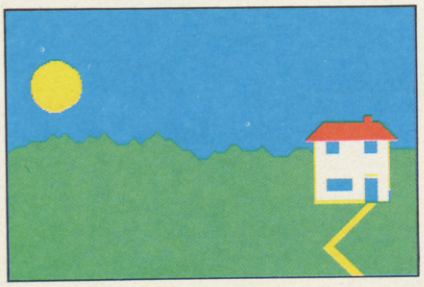
This month we will explore further the possibilities of animating scenes on the 48K Spectrum. The end result is a visual effect which, hopefully, is both interesting and entertaining.

One problem of exploring the technique is that the program which controls the animation is related very closely to the actual screens on which it operates. As these are stored as a literal SCREEN$ it is obviously impractical to convey them exactly. However, illustrations of the three screens used initially appear in Figure 1, and for those who wish to reproduce the screens used, a second illustration of the first screen with a grid superimposed on it — Figure 2 — is provided; the other two screens are, as can be seen, developments from this.

Figure 1. Three screens







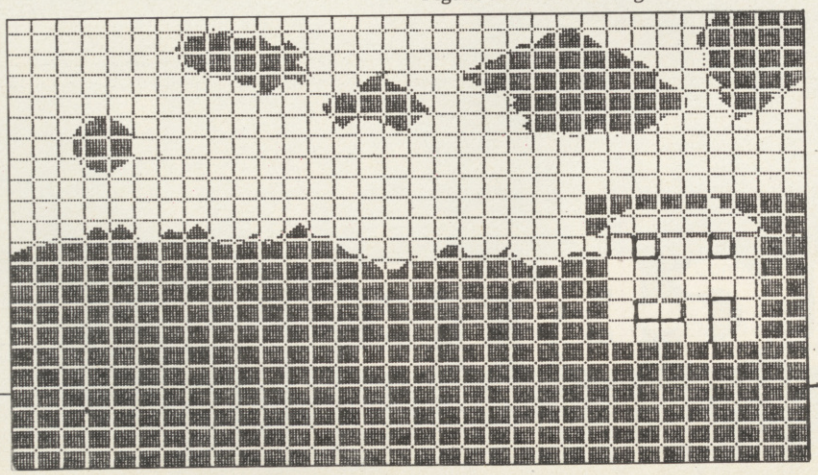
The screens were produced using the **Melbourne Draw** program, and the machine code routines used are largely derived from *Super Charge Your Spectrum* by David Webb, published by Melbourne House. Other routines could just as well have been used to produce other effects, but the main object is merely to illustrate possibilities.

The Basic control program used is listed in Figure 3. That should be typed in and saved: SAVE "storm" LINE 999. Immediately following that should be saved the block of code, a dump of which is given in Figure 4. The code is given in hexadecimal and should be read in rows from left to right. It may be entered using the short loader program listed in Figure 5, letters to be entered in lower case. The dump contains reference numbers underlined to show the first byte of each of the various routines, and should be ignored when entering the code. They refer to the list of routines — Figure 6. When the routines have been entered, they should be saved after the Basic program: SAVE "routines" CODE 32000, 360.

Finally, the three screens used should be assembled into a single block of code using the procedure and the screen storage program given in the August article. That block should then be saved as the third element of the program, immediately after the routines. The screens will commence at address 33000, and should be saved: SAVE "scenes" CODE 33000, 21000.

Let us take a look now at how the action unfolds. It is the dead of night. One by one, the lights of the house on the hill go out. A violent thunderstorm erupts, with lightning casting eerie reflections on the house. The storm abates, the moon rises, the stars come out — even a few shooting stars. As morning approaches, the lights are rekindled.

Figure 2. Screen with grid



```
111 e8 80 21 00 40 01 00 1b ed
 b0 c9211 00 40 21 e8 80 01 00
 1b ed b0 c9 0033e 00 4f e6 c0
 0f 0f 0f c6 40 67 79 e6 07 84
 67 79 87 87 e6 e0 6f 3e 37 fe
 c0 d0 91 d8 3c 4f 06 06 7d b0
 6f 3e 1f fe 20 d0 90 d8 3c 5f
 16 00 3a 41 5b 08 43 a7 cb 1e
 23 10 fb 08 a7 ed 52 fe 01 38
 20 28 27 cb fe cb 47 20 02 cb
 be 08 7c 3c 67 e6 07 20 0a 7d
 c6 20 6f 38 04 7c d6 08 67 0d
 20 d2 c9 08 7e e6 40 17 b6 77
 18 e2 08 3e 00 1f b6 77 18 da
 c9 00 00 00 00 00 00 00 00 00
43e 00 4f e6 c0 0f 0f 0f c6 40
 67 79 e6 07 84 00 79 87 87 e6
 e0 6f 3e 4f fe c0 d0 91 d8 08
 0e 00 7d b1 6f 3e 05 fe 20 d0
 91 d8 3c 4f 06 00 c5 e5 11 e0
 5b ed b0 e1 c1 d9 08 a7 28 1e
 47 d9 7c 3c 57 5d e6 07 20 0a
 7b c6 20 5f 38 04 7a d6 08 57
 eb e5 c5 ed b0 c1 e1 d9 10 e3
 d9 3a 41 5b fe 01 d8 20 07 11
 e0 5b eb ed b0 c9 3a 42 5b 41
 77 23 10 fc c9 00 00 00 00 00
511 fe 08 7b 07 07 07 5f 21 00
 40 01 18 00 7e a3 77 23 10 fa
 0d 20 f7 15 20 e9 3a 8d 5c 77
 54 5d 13 01 c0 02 ed b0 3a 48
 5c 77 0e 3f ed b0 c9 00 00 00
616 08 21 00 40 01 18 00 cb 3e
 23 10 fb 0d 20 f8 15 20 ef 3a
 8d 5c 77 54 5d 13 01 c0 02 ed
 b0 3a 48 5c 77 0e 3f ed b0 c9
```

Figure 4. Hexadecimal code

```
  10 CLEAR 31999: LET s=32000
  20 LET z=0: INPUT "Byte ";(s);
"= ";h$
  25 IF h$(1)="s" THEN  STOP
  30 IF LEN h$<>2 THEN  GO TO 20
  40 FOR n=1 TO 2
  50 IF (CODE h$(n)>=48 AND CODE
 h$(n)<=57) OR (CODE h$(n)>=97 A
ND CODE h$(n)<=102) THEN  LET z=
z+1
  55 NEXT n: IF z=2 THEN  GO TO
70
  60 GO TO 20
  70 LET x=CODE h$(1)-48-(39 AND
 h$(1)>="a")
  80 LET y=CODE h$(2)-48-(39 AND
 h$(2)>="a")
  90 POKE s,y+(16*x)
 100 LET s=s+1: GO TO 20
```

Figure 5. Loader program

Program explanation

Line 20 — Deals with the initial colour settings.

Lines 30-40 — The machine code recall routine at 32012 calls in the second screen as a title screen. Before it can do that, the routine has to be given two POKES — in the fifth and sixth bytes — which tell it the start address of the screen to be recalled. A table of which POKEs is given in Figure 7. A text title is printed, with a pause following.

Line 60 — Clears the screen, using the routine at 32320

Lines 90-100 — Supplies fresh POKEs to the recall routine and calls in the first screen

Line 110 — Prints three lit windows on house

Line 120 — Pause, then re-calls first screen

Line 130 — Prints two lit windows on house

Line 140 — As 120

Line 150 — Prints one lit window on house

Lines 160-170 — As 120 followed by a pause

Lines 200-210 — Sets up an outer loop of three, so that the following action takes place three times. On each occasion, a nested loop uses the recall routine, suitably POKEd, to call in the second screen (line 200) followed by the first (line 210) in rapid succession, thus giving the "lightning" effect

Line 220 — A further loop produces the 'thunder' — what do you expect on a Spectrum?

Lines 230-240 — Pause. Return the outer loop

Line 300 — Provides the POKEs necessary to use the rightwards pixel scroll routine at 32025 to scroll away the clouds. The routine works on a defined rectangle within the screen. The rectangle has co-ordinates for its upper left (x1, y1) and lower right (x2, y2) corners. The x co-ordinates are the usual horizontal character positions (0-31), but the y co-ordinates work on a pixel scale (0-175) reading vertically down the screen, not the usual PLOT co-ordinates which read upwards. The POKEs, taking s to equal the routine's start address of 32025, are: s+32, x1; s+37, x2; s+1, y1; s+23, y2. POKE 23361, 0 leaves a clear screen immediately behind the scroll. The POKEs used in the line define a rectangle which covers the clouds

Line 310 — Calls the routine set up in line 300 a sufficient number of times to scroll away the clouds, with suitable pauses to slow the action

Line 320 — Similar to 300, but sets the upwards pixel scrolling routine at 32150 to operate on the moon. The rectangle co-ordinates are similarly defined, the POKEs being: s+15, x1; s+36, x2; s+1, y1; s+23, y2.

Line 330 — Similar to 310, scrolling the moon

Line 400 — Sets up a loop for plotting the stars to random co-ordinates. The parameters of the y co-ordinates are set to encompass only the upper sky part of the screen

Line 410 — Excludes any random co-ordinates which would plot stars over the moon

Line 420 — Carries out plotting of stars, with random colour, and returns loop

Line 430 — Saves, as screen four, the existing screen. To do that, the screen save routine at 32000 is used, with appropriate POKEs as set out in Figure 7. In the case of this routine, it is the second and third bytes which must be POKEd.

Lines 500-510 — Sets up UDGs for shooting stars

Line 520 — Sets screen recall routine to fourth screen

Line 525 — Sets up outer loop of six, so that there are six shooting stars, followed by a semi-random initial horizontal co-ordinate for each

Line 530 — Sets up inner loop of eight, and prints the shooting star on each return of the loop

Line 540 — After a pause, recalls the fourth screen, thus overprinting the star. The star horizontal co-ordinate is then decreased by one, which within the loop makes the star move diagonally across the screen.

Line 550 — Returns inner and outer loops

Line 560 — Brings house lights back on

Line 570 — After a pause, clears the screen using the routine at 32270

Line 600 — Resets recall routine to daytime and calls in that screen

Lines 630-650 — Opportunity to re-view

Line 999 — The auto-run line, which sets RAMTOP to protect the code and loads the two blocks of code.

Figure 3. Basic control program

```
  10 REM 1984 M.J.Rapps
  12 PRINT
  13 PRINT
  14 RANDOMIZE
  15 RUN
  20 BORDER 7: PAPER 0: INK 0
  30 POKE 32016,64: POKE 32017,1
56: RANDOMIZE USR 32012
  40 PRINT  INK 7;AT 17,5;"THE N
IGHT OF THE STORM"
  60 PAUSE 200: RANDOMIZE USR 32
320
  90 POKE 32016,232: POKE 32017,
128
 100 RANDOMIZE USR 32012
 110 PRINT  OVER 1; PAPER 6; BRI
GHT 1;AT 11,25;"(sp)";AT 11,28;"
(sp)";AT 14,25;"(2*sp)"
 120 PAUSE 100: RANDOMIZE USR 32
012
 130 PRINT  OVER 1; PAPER 6; BRI
GHT 1;AT 11,25;"(sp)";AT 11,28;"
(sp)"
 140 PAUSE 100: RANDOMIZE USR 32
012
 150 PRINT  OVER 1; PAPER 6; BRI
GHT 1;AT 11,25;"(sp)"
 160 PAUSE 50: RANDOMIZE USR 320
12
 170 PAUSE 150
 200 FOR n=0 TO 2: FOR f=0 TO 3:
 POKE 32016,64: POKE 32017,156:
RANDOMIZE USR 32012
 210 POKE 32016,232: POKE 32017,
128: RANDOMIZE USR 32012: NEXT f
 220 FOR g=0 TO 30: BEEP .01,-25
: BEEP .01,-30: NEXT g
 230 PAUSE 80
 240 NEXT n
 300 LET s=32025: POKE s+32,6: P
OKE s+37,31: POKE s+1,0: POKE s+
23,55: POKE 23361,0
 310 FOR f=0 TO 200: PAUSE 2: RA
NDOMIZE USR 32025: NEXT f
 320 LET s=32150: POKE s+15,0: P
OKE s+36,5: POKE s+1,0: POKE s+2
3,79: POKE 23361,0
 330 FOR f=0 TO 35: PAUSE 4: RAN
DOMIZE USR 32150: NEXT f
 400 FOR f=0 TO 125: LET x=INT (
RND*255): LET y=INT (RND*70)+105
 410 IF (x>8 AND x<56) AND y>144
 THEN  NEXT f
 420 PLOT  INK INT (RND*6)+1;x,y
: NEXT f
 430 POKE 32001,240: POKE 32002,
210: RANDOMIZE USR 32000
 500 FOR f=0 TO 15: READ a: POKE
 USR "a"+f,a: NEXT f
 510 DATA 1,2,4,8,16,96,96,0,1,2
,4,8,16,32,64,128
 520 POKE 32016,240: POKE 32017,
210
 525 FOR f=0 TO 5: LET m=INT (RN
D*20)+10
 530 FOR n=1 TO 8: PRINT  PAPER
1; INK 2;AT n,m;"A";AT n-1,m+1;"
B"
 540 PAUSE 2: RANDOMIZE USR 3201
2: LET m=m-1
 550 NEXT n: RANDOMIZE : NEXT f
 560 PAPER 6: BRIGHT 1: PRINT AT
 11,25;"(sp)": PAUSE 50: PRINT A
T 11,28;"(sp)": PAUSE 100: PRINT
 AT 14,25;"(sp)": BRIGHT 0
 570 PAUSE 100: RANDOMIZE USR 32
270
 600 POKE 32016,152: POKE 32017,
183: RANDOMIZE USR 32012
 630 PRINT  PAPER 4; INK 0;AT 21
,0;"Do you wish to view again? (
y/n)": PAUSE 0
 640 IF INKEY$="y" THEN  RUN
 650 STOP
 999 CLEAR 31999: LOAD ""CODE :
LOAD ""CODE : RUN
```

Figure 6. List of routines

Start address	Routine
32000	Screen save
32012	Screen recall
32025	Horizontal scroll
32150	Up scroll
32270	Screen clear (fade)
32320	Screen clear (shift)

Figure 7. List of POKEs

Screen number	Start address	Poke 1	Poke 2
1	33000	232	128
2	40000	64	156
3	47000	152	183
4	54000	240	210

For screen save routine POKE 1 should be in second byte of routine, POKE 2 in third byte. For screen recall routine POKE 1 should be in fifth byte of routine, POKE 2 in sixth byte.

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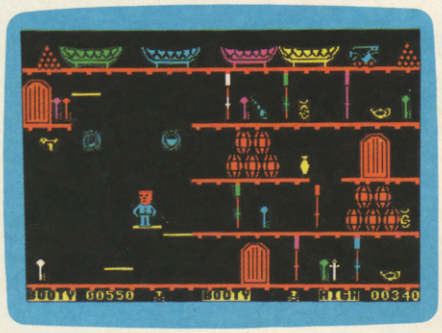

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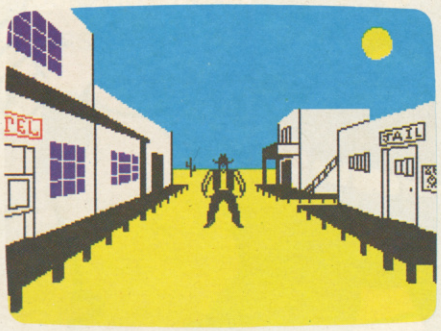

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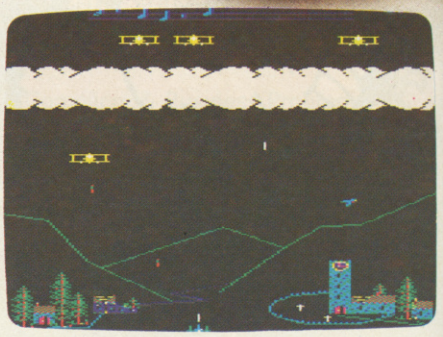

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Modem lovers

Electronic publishing is still in its infancy. Chris Bourne talks to the proud parents

The Micronet Story

IT ALL started in the garden. Back in the dawn of history, in 1981 to be accurate, East Midlands Allied Press decided that it wanted to get into electronic publishing.

Electronic publishing is simply the presentation of information through some form of computer network. Ceefax and Oracle, the two television information systems, transmit information directly to television sets with the appropriate receivers. Those services are free, as long as you have the right equipment, but limited to pure information, with no opportunity for the user to interact with the system.

The other means of transmitting information is to use an existing network, such as the telephone system. British Telecom originally set up Prestel as a means of utilising spare capacity on the telephone network in the evening.

Prestel sold space on the network for businesses who wanted to set up in electronic publishing, and EMAP decided to use its experience in publishing magazines to provide specialist information to Prestel subscribers. There were, however, problems in setting up the service. Television sets which could receive Prestel were expensive, and you also had to pay a subscription fee and the price of the telephone call every time you used the service.

According to David Babsky, editor of Micronet 800, most of the early Prestel television sets were in travel agents' offices. Despite attempts to allow people to do their shopping on Prestel by ordering goods on credit cards, there were very few home users.

EMAP came into service with Telemap. "EMAP published a magazine called *Garden Trade News,* and decided to start by providing information for garden centre operators who needed to be kept in touch with manufacturers and suppliers. Unfortunately there were relatively few garden operators so it wasn't worth pursuing."

By 1982 EMAP was publishing computer magazines. It was decided to ditch the rather scarce garden centre operators and pursue home microcomputer owners as the ZX-81 was rapidly turning the field into a mass market.

"ZX-81 owners were self-motivated" says Babsky. "They had a keyboard, processing power, and a display in the form of the TV. All that was needed was a telephone connection and a means of presentation."

The black box which connects a home computer to the telephone system is called a modem. You can use a modem for talking to other computers with modems, as well as for accessing databases such as Micronet 800. A modem has two functions. It can send and receive information down the telephone lines and it can interpret the information it receives so that a computer can print it onto the screen. Prestel presents information in lines of 40 characters, but the ZX-81 and Spectrum only use 32 characters per line. The modem must therefore enable the computer to display the information in the Prestel 40-character mode.

The BBC Model B was a gift to the designers of Micronet, because the graphics mode 7 on the machine, the lowest resolution, was identical with the 40-column configuration of Prestel. Suddenly the problems of producing a cheap modem disappeared. The resulting service was called Micronet 800, the 800 signifying that the service began on page 800 of Prestel. Micronet began operating on March 1, 1983 and since then has broadened to include special services for owners of the BBC Model B, Sinclair Spectrum, Commodore 64 and Apple II and IIe.

'Micronet is to the 80s what the Gütenburg Bible was to the Middle Ages'

So what is Micronet, what does it offer, and how much does it cost? The first thing you need is a modem. If you own a Spectrum, then you want the Prism VTX 5000 or alternatively Interface One with any modem, as Interface One contains an RS232 socket to standardise the signals sent out by the Spectrum.

Micronet costs £52.00 a year to join, and once you have paid your subscription you will be given a code number and password. Together, those numbers allow you to access Micronet. It all sounds extremely simple, but in practice there can be problems. For a start your phone must have one of those fancy modern plug-in sockets, because you have to plug the phone into the modem instead of the wall. Secondly, if you are blessed with an exceptionally bad line, with lots of background noise, the central computer may fail to understand your code numbers.

The most popular facility, according to Babsky, is Mailbox. Electronic mail is simply the ability to send messages to other people on the network. It is extraordinary how addictive the idea becomes. Once you discount the cost of the subscription, it is usually cheaper than using the post, and gets round the problem of finding there is nobody on the other end of the phone when you call. You simply obtain the appropriate mailbox number from the list of members and leave your message.

When Micronet first started it budgeted for running the system, obtaining software and similar services. "The one thing we never realised was the enormous number of messages there would be between users," says Babsky. "We had to find people to route the messages, which meant other areas of growth took a back seat."

Mailbox is a definite advance on the usual Prestel/Ceefax style. The ability to send messages through the system is the core to an interactive database as opposed to a mere encyclopaedia of information. For the first fifteen months of operation Mailbox was only available to people who used the same central computer. Briefly, Prestel and Micronet use a number of computers all over the country, and users telephone the nearest one in order to obtain the cheapest price for the call. Even if you live in Edinburgh and the nearest computer is in Birmingham, an arrangement with British Telecom means you only have to pay at the same rates as a local call. Mailbox thus only operated between users grouped together on one computer.

That is changing. Last month Micronet extended Mailbox to cover a national network, so there is no limit to the number of people you can talk to as long as they are registered with the system.

"The big drawback is that although you can write to each other through Mailbox, or to Micronet itself through the response frames, until recently you couldn't broadcast to everyone over the system," explains Babsky.

Micronet has now altered that state of affairs by introducing Chatline, which allows you to write material directly into the system. Chatline is uncensored, but is carefully monitored, and any obscene or libellous messages are deleted. It only operates between 8 and 10 pm.

The Mailbox system is not controlled at all, and there has been a little trouble at times. But Babsky insists that the

continued on page 70

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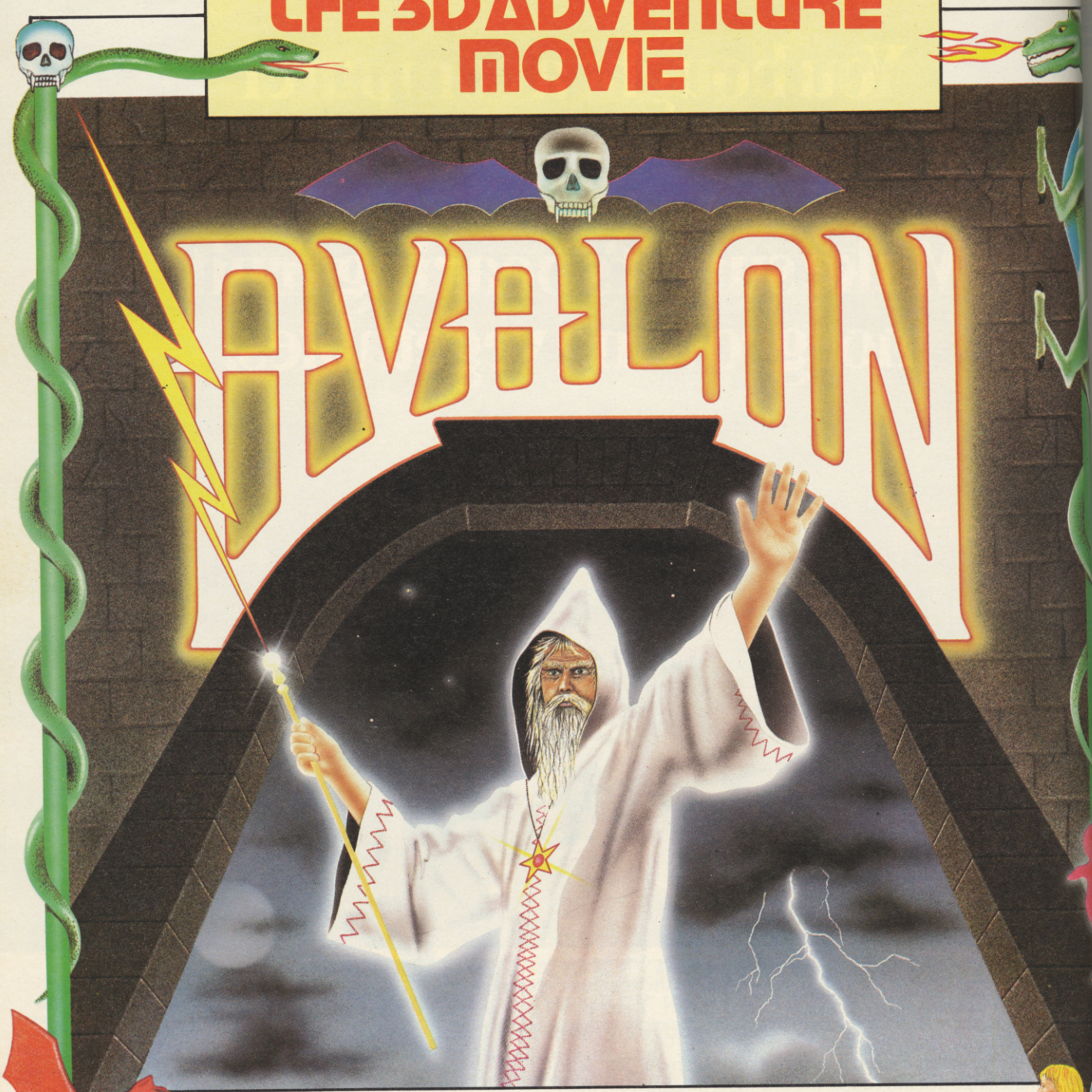

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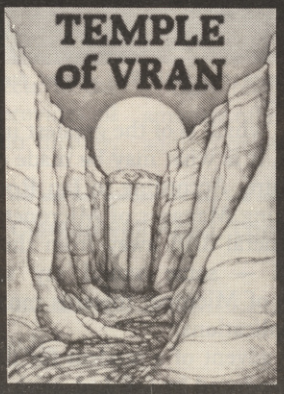

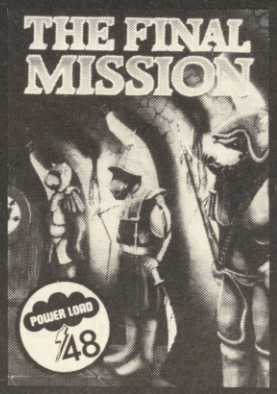

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The Micronet Story

continued from page 65

system allows for much more effective sanctions than with the telephone or postal services. Any messages which offend, shock, or annoy can easily be traced back to the offender as the names are automatically logged. "We have had only two cases out of 10,000 users where we have had to take action" says Babsky. "One was a man posing as a maintenance engineer who obtained people's ID numbers and used them to send messages to others. The second was a boy who was sending rude messages."

Another service is Contact, which includes sections for those seeking advice about their computers, an adventure helpline, and even a 'lonely hearts' section. Requests such as 'Lonely guy seeks sexy BBC owner, how about a drink sometime?' add a whole new dimension to romance. Love me, love my computer tends to be the plaintive cry of the socially bored hacker. Could you love a man with a Jupiter Ace?

Apart from message sending, Micronet also contains an up-to-the-minute news service. Micronet's news editor, Sid Smith says, "It's akin to broadcasting, except that the difference in technology means you always get information whenever you want. We got news, specifications, interviews and reactions to the QL within two hours of it being launched. We had the first programs for the machine, and the first real hands-on review." Smith is clearly pleased with that particular story, as he has a framed photograph of himself interviewing Sir Clive above his desk.

"We produce a minimum of three new stories a day" he says. "It's very exciting. The pressure is far greater than on magazines. You are telling people things they don't already know."

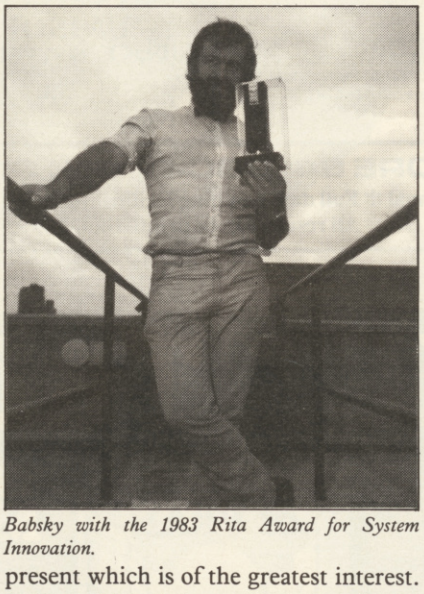
However, the core of Micronet is not the news service — even Sid Smith agrees with that. "We don't think readers want a quick information fix," he says. Babsky is quite clear on the point. Headlines, even for news stories, are deliberately obscure, sometimes to the point of being meaningless. "The object is to provide entertainment and enjoyment rather than an encyclopaedia. We want to make things intriguing. None of the headlines tell you what the subject is about."

Although Babsky's policy is that you should never be more than three steps away from the information or facility you require, the combination of obscure headlines and the general problem of learning how to operate a 'menu-driven' system efficiently can cause problems for newcomers to the system.

It is possible — indeed, easy — to get hopelessly lost within the 40,000 frames of Micronet. "People do complain" Babsky admits. "They are obviously very aware of the money factor. But they say it's still great."

Nevertheless, using Micronet may be cheaper than you think. As long as you are talking to the nearest Prestel computer, you only pay local charges. If you telephone after 6pm then you are spending about 40p an hour. Using the system during office hours is obviously more expensive, but not cripplingly so. An average of an hour a day would cost you £4 a week including the subscription fee.

But it is not the service as it stands at present which is of the greatest interest. Rather, it is what may be made of it in the future. According to Ian Rock, the Marketing Manager of Micronet, there is a general drift away from the lighthearted — some would say silly — aspects of Micronet towards more serious applications.



Babsky with the 1983 Rita Award for System Innovation.

The advent of a modem for the QL, to be produced by OE Ltd, with luck in time for Christmas, will increase the number of home professional users on Micronet. Micronet is responding with a QL database, including a user magazine and free software. A business service recently available to Micronet subscribers is Computergram, a newsletter published by APT Data Services. Within hours of APT receiving news, it is broadcast on Micronet. The information is worldwide, and covers the upper echelons of the computer market, the financial and competitive shenanigans of such names as DEC, Hewlett Packard, and IBM. "If a story breaks in California, it can be on Micronet three hours later" says Rock. Those *Sinclair User* readers with a substantial stake in IBM had better tune in fast.

The comparative cheapness of Micronet 800 as an interactive database makes it an attractive means of creating an electronic network for clubs and other organisations who cannot afford either the hardware or the subscriptions to large, business orientated systems. For instance, the Labour Party is now operating a private information database on Micronet as an experiment. The party hopes to provide constituency parties with information and news on action groups and other developments of interest to branches.

Prestel itself will start a service aimed at secondary schools next spring, School Link. Micronet is to attack the home market from November with Head Start. "It will provide programs and notes for the 5–12 age group and their parents" says Ian Rock. "Simple ABC stuff first, but will gradually increase the range to O Level. David Babsky has some Shakespeare programs he's very keen on."

Sid Smith feels electronic publishing is science fiction made fact. "There is a real problem of people who have a Spectrum just sitting on the sideboard. It's a cul-de-sac. To link up yours to thousands is remarkable. You are no longer limited to a Z80 based entity."

David Babsky is in no doubt about the revolutionary potential of electronic publishing. "The thing that inspired me most was looking at the Gütenberg Bible, the first book to be printed using moveable type. Micronet is to communication in the 80s what that Bible was to the Middle Ages."

If Micronet is Babsky's Bible, the service certainly inspires great loyalty among its subscribers as well as considerable vitriol from those who complain. The messageboards of Micronet are packed with electronic insults aimed at the way Micronet is run. But according to Ian Rock, there has only been a 5 per cent cancellation rate of subscriptions, which contrasts with around 25 per cent for more conventional publications. That would seem to indicate that Micronet subscribers, whatever the faults of the system, are sufficiently anxious to be part of a new age of communication technology to forgive the present system its growing pains.

For further details contact Micronet 800, Telemap Ltd, Scriptor Court, 155 Farringdon Road, London EC1R 3AD.

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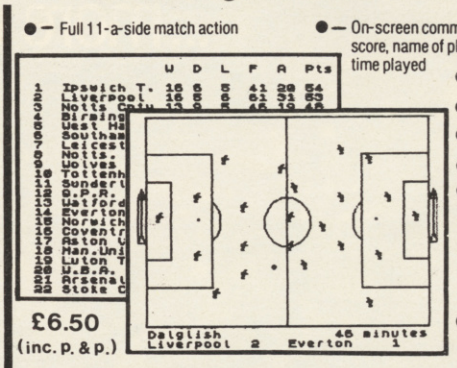
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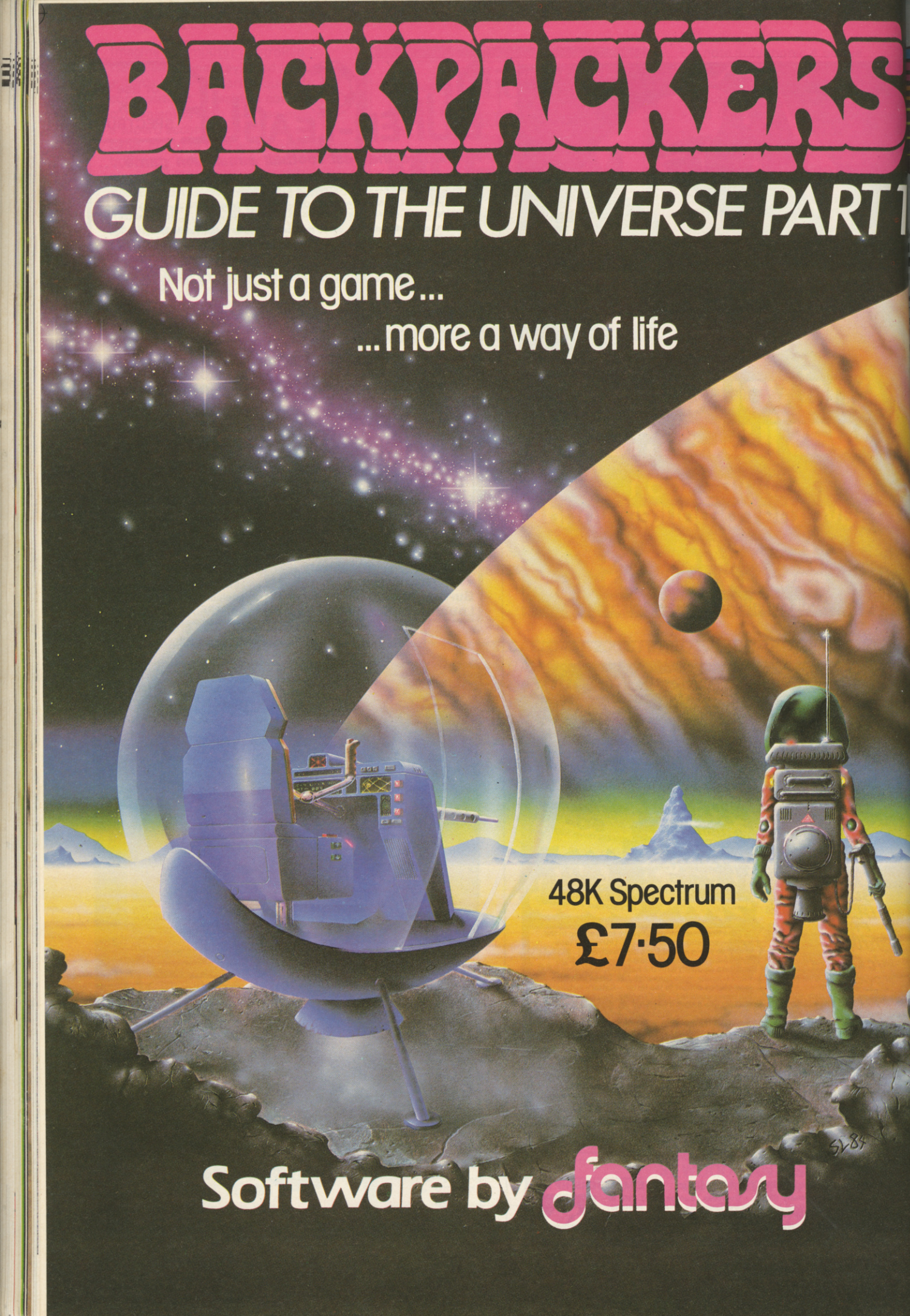
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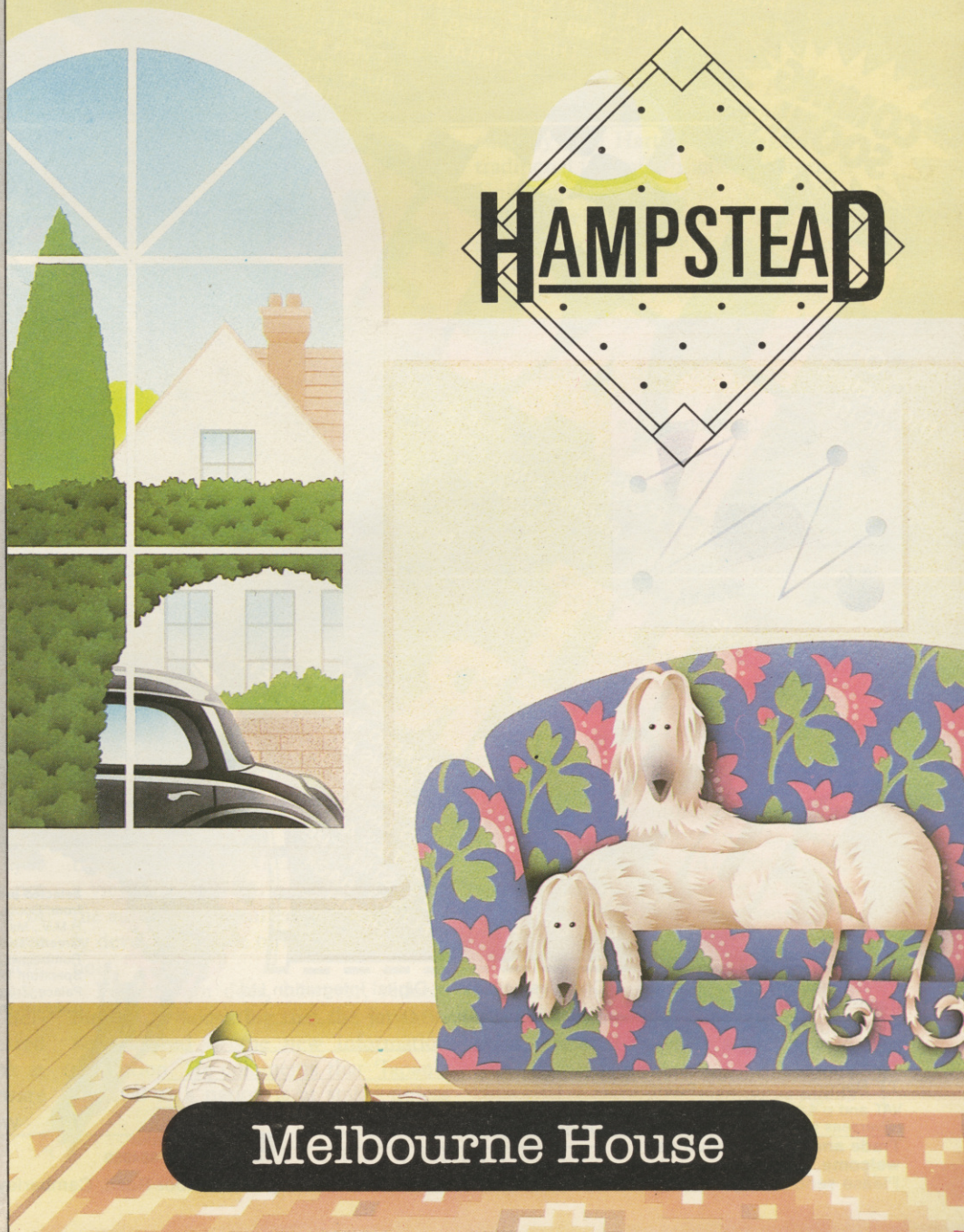

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The fifth generation

Some computer prophets say that the age of the thinking machine is near. They see a world in which machines could be gods of information. John Gilbert investigates the claims.

ARTIFICIAL Intelligence, AI, has become one of the most facinating areas of interest to the computer fraternity.

An underlying interest in the production of 'intelligent' machines has always been evident in the computer world but it has not been until the last six months or so that the subject has caught the headlines in computer magazines and books. The reason for that is the difficulty in writing about a subject which has evolved no terms of reference at a simple level.

One of the books which has tried to do just that, and failed to some extent, is *The Fifth Generation,* by Edward Fiegenbaum and Pamela McCorduck. The attitude of the American authors shows that they have no doubt that fifth generation artificial intelligence within a machine environment is possible. We are currently in the middle of the third generation of microcomputers, which involves integrated circuits. The first and second generations have evolved from gas heated valves and transistor technology. The fourth uses very large scale integrations, VLSI, and fifth generation will show dramatic leaps not only in hardware but in software.

The authors state that artificially intelligent machines will be able to manipulate information and come to conclusions, or reason, on the basis of that data. Unfortunately, their idea of AI seems to be confined to a machine which can amass huge amounts of data, using enormous memory banks, and offer that information to another user in any format required. Many expert systems can do that already and they would in no way be termed intelligent.

Unfortunately, the concept of consciousness, though touched on briefly, is not dealt with in anything approaching enough depth. Some readers will, as a result, feel that the authors have not produced an adequate formulation of the different definitions of AI and have only put across their own views which, they seem to think, are unchallengeable.

Once the problems of terms of reference have been established and cleared the authors then launch into a look at the Japanese innovations in software and hardware techniques. They see information as the next great commodity on the world market and explain that the Japanese with their KIPS, Knowledge Information Processing Systems, are on the way to becoming the next great superpower which could have domination over the USA and USSR, at least in economic terms.

The fifth generation of computers, unlike the last four, will be one in which software, and not hardware, is most important. Feigenbaum says that 'significant levels of innovation' in software techniques will have to be achieved before the fifth generation can be implemented. He then goes on to say that the Japanese are close to such breakthroughs and that they will have a dangerous monopoly on such new techniques unless other countries, for example the United States, do something to safeguard their interests. Such a viewpoint is slightly naive and shows the authors to be suffering from a highly developed sense of information paranoia.

Micro thought

Feigenbaum does, however, redeem himself by admitting that the Japanese need a lead in the new information revolution. He comments that 'Japan's survival as a nation is at stake' unless new quantum leaps in technology are made by that country. What he does not overtly say, however, is that his pessimistic viewpoint about the American lack of interest in the subject is fuelled by the fear that what could happen to the Japanese if they fail could also happen to the United States.

The Fifth Generation, despite its technofear style, is an interesting and digestible book which will appeal to computer historians and prophets alike. Sir Clive Sinclair thinks that it is 'essential reading for anyone concerned with computers' and what greater endorsement could you get than that?

On a more practical note *Exploring Artificial Intelligence on Your Microcomputer* by Tim Hartnell investigates the traditional idea of artificial intelligence. Unfortunately the book might have been better titled 'How to write strategy games or programs which will talk back to you'.

Hartnell's overview of the field of artificial intelligence is informed and concise. It does not side-step the issue but equally it does not go to much trouble to evaluate the terms of reference that were mentioned earlier. To be fair the book is not just another tome of listings. The examples are broken down so that the reader gets a few lines at a time together with a paragraph of explanation. Many of the listings are then reproduced as a whole, although it is not clear if that is to help the reader or whether it is just to fill space.

All the programs use conventional programming techniques and if The Fifth Generation terms of reference were used the book could not be described as a text about artificial intelligence.

To be fair, the author does deal with the subject of Syllogy, an area which figures greatly in the AI debate along with information processing. The area covers forms of deductive reasoning in the style 'if a and b are true then c is also true'. Computers can deal with such relational arguments and can also make the connections between relationships. Hartnell includes a program to show how it is done.

continued on page 78

Visions of the Future

continued from page 77

Although Exploring Artificial Intelligence is more a book for those casually interested in the thinking machine it provides a view of the subject which should appeal to many people who want to improve their programming skills. It takes the reader to an advanced level but, because of the limitations of Basic, does not even touch the realm of what would now be termed artificial intelligence.

The same can be said of *Artificial Intelligence on the Spectrum Computer,* by Keith and Steven Brain. The book contains little information that could not be acquired from good texts on adventure gaming or data processing.

Subjects such as entering English sentences and getting sensible replies from the computer are covered together with short examples which are not particularly imaginative. One good point about the book is that program listings are backed up with flowcharts which detail the techniques which have been used to create the revolutionary new program. That will better enable the reader to adapt techniques to specific programming needs rather than have to wade through the programs.

The authors have, like Hartnell, taken a simplistic view of AI. They see it as a method of communicating with computers and in turn receiving a coherent reply. They also touch on matters such as recognising shapes but make no attempt to distinguish the real points of issue in that area of AI.

The chapter on shape recognition deals only with input from the keyboard and not with senses such as touch, sight, and sound recognition. All those areas are under investigation by computer scientists but none of them are mentioned in detail by the Brains.

If other Sunshine books can include information about setting up hardware for simplified sensor devices then surely the Brains' book could make at least some effort to look at the subject in depth without shying away with a few examples which are old hat to most programmers.

Build Your Own Expert System by Chris Naylor on the other hand, is a welcome relief from the simplistic views of AI given by some authors when dealing with the subject.

The book is about building relational databases which can be questioned in order to obtain specific information. Naylor introduces the random element which occurs in the thought processes of most human beings and which probes for new areas of knowledge. For instance, the author gives an example of a database which will predict what the weather will be like the day after the prediction was made. If it is rainy today and has been raining all week, the chances are that it will rain tomorrow. With that supposition and a knowledge of cloud formations the computer might predict that it will continue to rain tomorrow. If the prediction is wrong the method used by the machine will be adjusted. That might be by providing better knowledge of weather movements or lengthening the odds of certain weather patterns occuring. It is a hit and miss business but it is a better display of AI than any of the books reviewed earlier could muster.

Naylor's book is a must for computer users clamouring for more information about AI or wanting to do something useful with their Spectrums. It is one of the few books worth reading on the subject and, with Naylor's unpretentious skill as a writer, it is certainly one of the most readable. *John Gilbert*

The Fifth Generation, Pan Books, £2.95.
Exploring Artificial Intelligence on Your Microcomputer. Interface Publications, £4.95.
Artificial Intelligence on the Spectrum, Sunshine Books, £6.95.
Build Your Own Expert System, Sigma Technical Press.

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Idle worship

Theo Wood examines the case against AI

PUBLISHED earlier this year for the first time in Britain *Computer Power and Human Reason, From Judgment to Calculation* was originally published in 1976, but contains much that is relevant today.

The author, Joseph Weizenbaum, must be considered a heavyweight by anybody's standards; currently Professor of Computer Science at MIT — Massachusetts Institute of Technology — he has had a career in computers since 1950.

Weizenbaum's book has received a fair amount of media attention, due mainly to the inclusion of a new preface to the 1984 edition. That contained a blistering attack on the computer games fever which has spread across America and Europe in recent years. The main basis for his attack centres on the process of psychic numbing of the individual who plays those games, similar to that which takes place for man to wage modern warfare. It was he also who described the computer junkie way back in 1976.

Although important, those are, however, only peripheral to the central concern of the book, which is a systematic description of how computers work and a similarly systematic attack on the work done by Artificial Intelligence researchers. With books such as *The Fifth Generation* published and Sir Clive Sinclair talking about the wonders of the new technology, it is still worth reading Weizenbaum to place those thoughts within the context of human values.

Weizenbaum doubts that Artificial Intelligence can be anything close to human intelligence, and portrays with scorn such statements made by eminent scholars such as Professor John Macarthy, then head of Stanford University's AI laboratory, who said, "The only reason we have not yet succeeded in formalizing every aspect of the real world is that we have been lacking a sufficiently powerful logical calculus. I am currently working on that problem."

For Weizenbaum the idea that all human activity and thought can be reduced to formal equations capable of being computerised is beyond belief. Having worked on a natural language program, ELIZA, which allowed conversation between the user and the computer as to the user's mental state, Weizenbaum was horrified to find that serious attention was being given to it. Specialists in the psychiatric world were considering the use of such programs in place of human therapists.

Weizenbaum's book is a bellow of anguish from the heart of the computer establishment and, as such, requires some serious attention. However, it is an academic's book in that the main chapters concerned with AI are high-level intellectual infighting. For a more general purpose examination of the social implications of computerisation, Michael Shallis's book *The Silicon Idol* is more suitable.

Cutting down the gods

Depending on which viewpoint it is judged from, the book can either be seen as the work of a Don Quixote tilting at windmills, or of a man trying to communicate the deepest reservations about the introduction of micro-technology into the world of work and human relations. Shallis owes a lot to Weizenbaum for covering the same ground but from a slightly different standpoint. The descriptions of how a computer works are not so comprehensive but, on the other hand, are much more accessible by the reader who may have no previous knowledge of the subject.

For Shallis the suggestion that computers can come anywhere near having what are essentially human characteristics is debasing the human condition. He is particularly strong on the history of computers and intertwined with this the history of man's attitude to service and technology and the power of technology to transform society.

In a world climate of increasing speed of technological change *The Silicon Idol* is ideal for the general reader to take stock of where that change will have maximum impact, as well as its social consequences. Shallis is sceptical of the shining brave new world of high technology, where most of the population do little or no work as we know it in its present form. He reaches the crux of the dilemma when he states that new technology is usually used for economic reasons, replacing humans in both the manufacturing and the service sector, leaving fewer and fewer people to work in factories and offices. Neither does that move to automation provide an alternative to work which is considered dull and repetitive.

Michael Shallis is an unashamed Luddite and is appropriately pessimistic about the future of work and the social disruption that might cause. He offers no solutions to the problem, merely setting it before the reader in what might be considered a sensationalist and extreme form. In so doing he provides enough fuel for discussion between here and Armageddon.

There seems to be a general consensus that we are in an age of transition, and the two books discussed are important in that they raise issues central to that. Are there activities which computers ought not to be part of? Are computers going to be 'more intelligent' than humans? How are masses of people going to react to enforced leisure/redundancy?

The answers to the first two involve philosophical enquiry, depending on the definition of human intelligence — are we as humans simple input/output devices whose though processes can be reduced to a logical calculus? The third question depends on the way we as a society organise ourselves in the next twenty years. The debate has already begun — it is too important to be ignored.

Theo Wood

Computer Power and Human Reason: From Judgement to Calculation.
Joseph Weizenbaum, Pelican Books, £2.95.
The Silicon Idol: The Micro Revolution and Its Social Implications.
Michael Shallis, Oxford University Press, £8.95.

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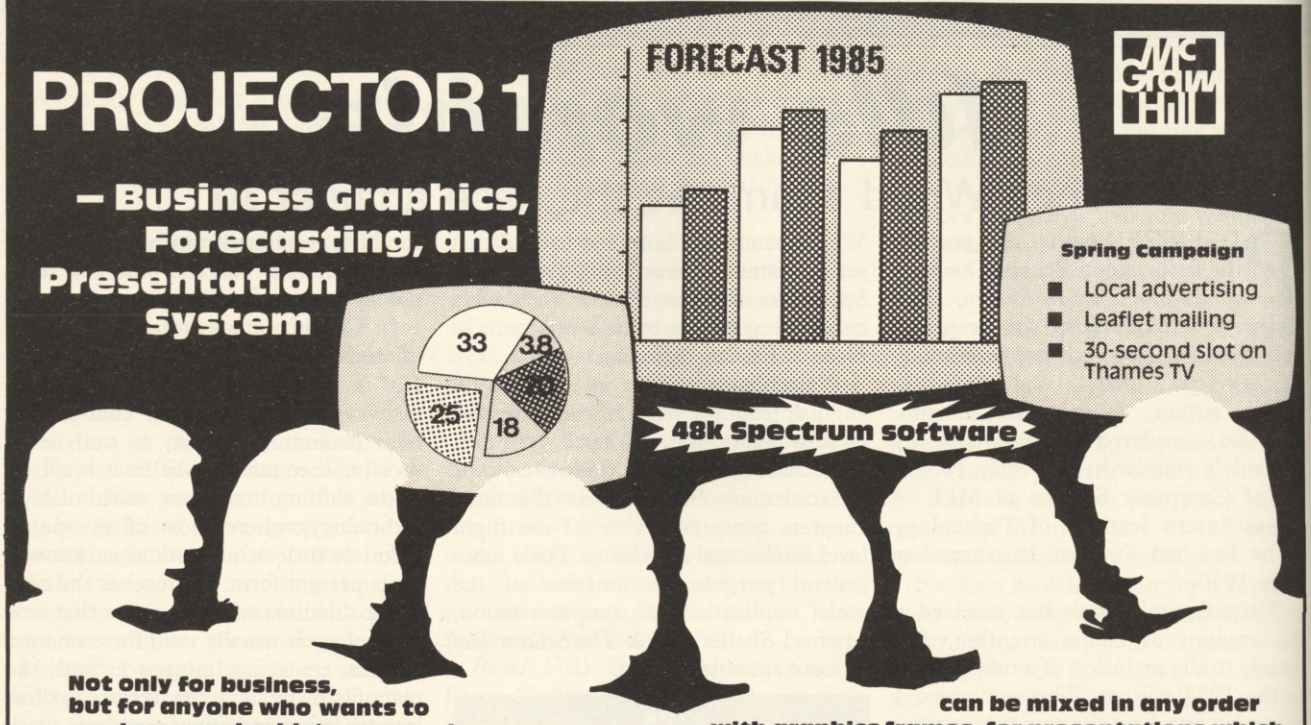

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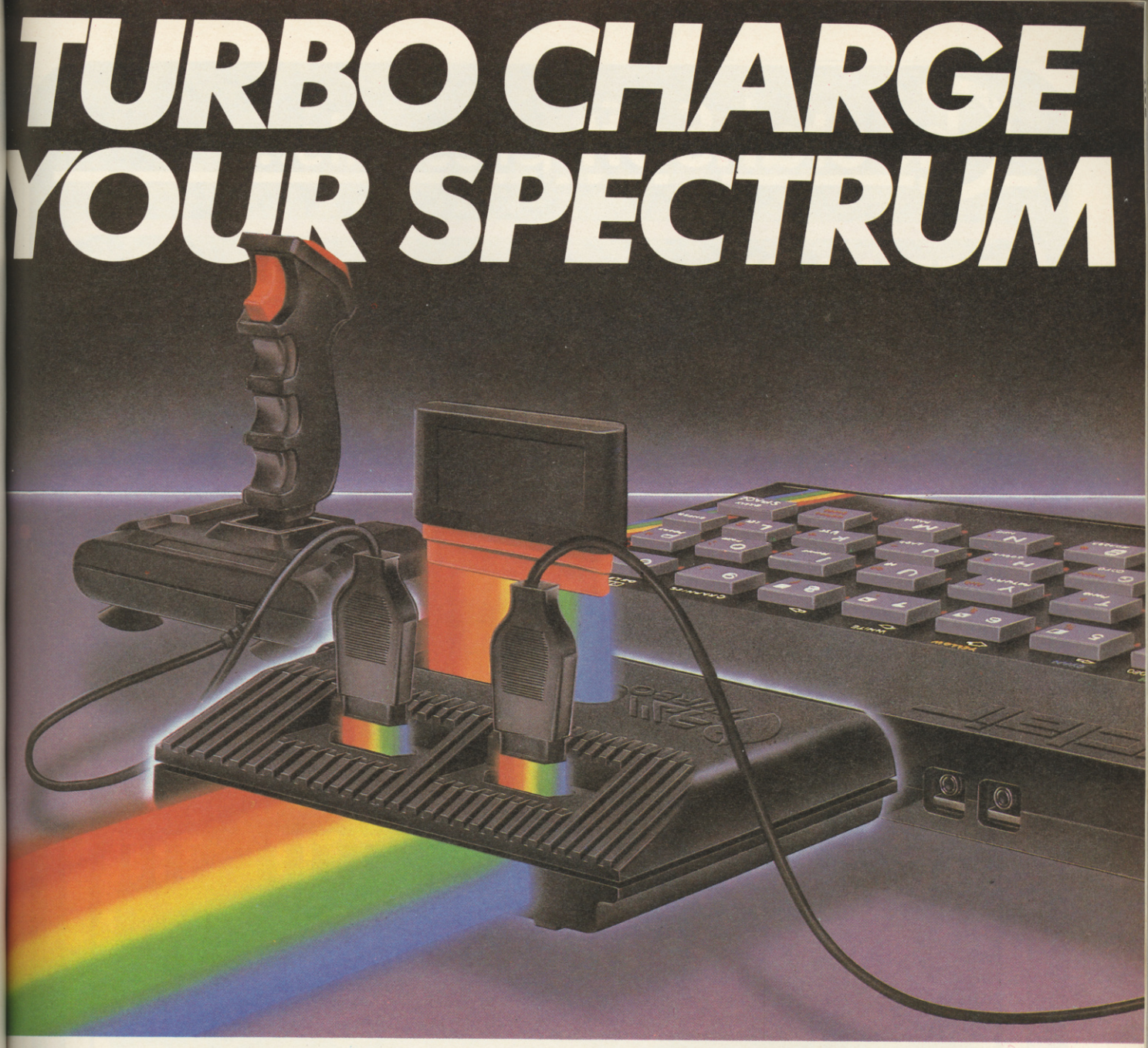

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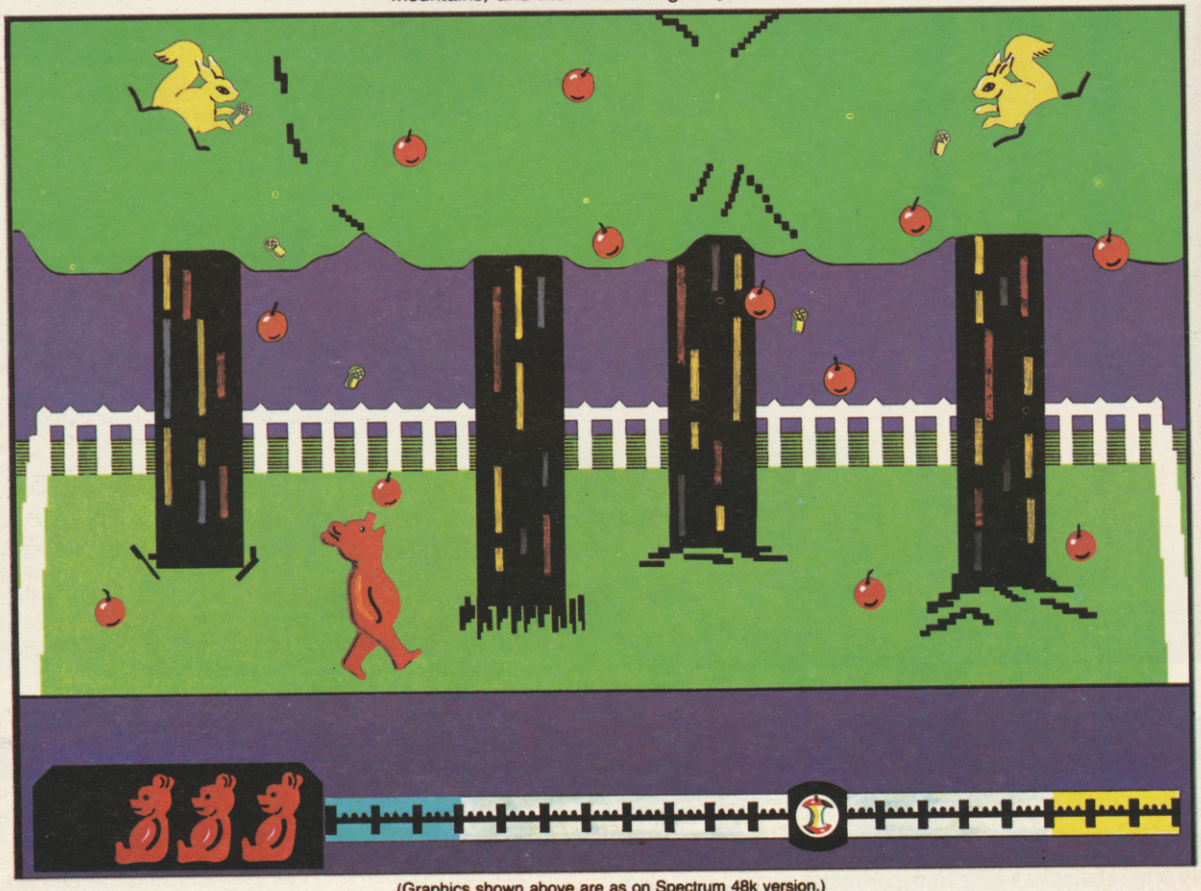

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Silicon nightmares

Sir Clive Sinclair sees a rosy robotic future. Alexander Macphee, systems analyst, disagrees

SIR CLIVE Sinclair has speculated on a vision of the world of the future, a vision in which, the editorial comment remarked, there was little to cause a raising of the eyebrows. I do not share the editor's eyebrows.

The central ideas in Sir Clive's remarks were firstly that current developments in Computer Science are leading to superintelligent silicon-based life forms and secondly that human problems can be solved by the application of advanced technology. Neither of those assertions is unchallengeable.

The speculation that computers will develop as living beings is a revival of an idea first advanced in the 1950s in Artificial Intelligence studies, often referred to as 'Strong AI'. It is not a new idea, but no more justifiable now than it was then. What is remarkable about those speculations is the number of uncertain, unself-critical and seriously flawed assumptions made, and the seductive use of vocabulary in foreign contexts.

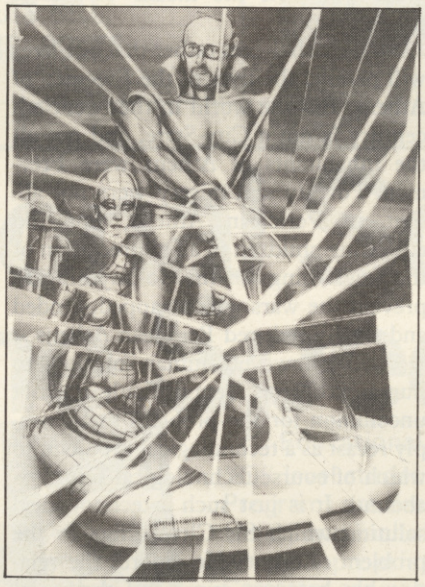
Seriously flawed

The most primitive of those assumptions is that the way in which a computer processes information is in any way similar to or cognate with the way in which a human being — or indeed any other animal — processes information, or even that information processing is the sole or most important attribute of sentience.

There is no reason whatsoever to suppose that the way in which human brains work at the neurophysiological level is in any way similar to the workings of a computer at the electronic bit level. Yet it has always been a human failing to attempt to describe the workings and functions of the human brain in the vocabulary of current technology; formerly as a set of compartments in a Victorian office communicating by memos, later, at the turn of the century, as a telephone exchange switching messages, and currently as a bit-twiddling and byte-shuffling device.

None of these is either valid or instructive, although the computer analogy is clearly more seductive, so much so that as a result of idiot anthropomorphisation people have come to think of human brains as operating like a computer 'brain', a notion which has been reinforced by the use of computing vocabulary to describe human brains. Thus it is an easy step for Sir Clive to turn a computer into a real functioning brain. All you have to do is

". . . . render it intelligent by loading the proper software . . ."



Under that view, thinking is no more than a set of rule-based operations, and the world is no more than a series of puzzles to be solved by primitive and computable rules.

Understanding is not derived from formal rules alone. John Searle demonstrated that in his Chinese Room analogy in *The Behavioral and Brain Sciences.* A man with no knowledge of Chinese is locked in a room. He has a script in Chinese — which he doesn't understand — together with a set of formal rules in English — which he does — which enable him, when given lists of Chinese symbols, to construct other lists of Chinese symbols, which he can pass back out of the room. Unknown to him, his Chinese script is a story, the list of symbols he is given is a list of questions, and the list of symbols he constructs are really answers to the questions about the story, which are indeed understood by native Chinese speakers. In what sense can that mechanical, rule-based symbol manipulation be called understanding?

Staggeringly stupid

Those areas that are claimed as successes in the field — the so-called 'expert systems' — owe their success to the fact that the conditions under which they operate are strictly defined, as are the problems which they are designed to solve. 'Expert' is, of course, another of those seductive words. Another example often quoted is the success of some chess programs. Here the restriction of operation to a rule-based and context-free world is signally clear.

Sir Clive also confuses knowledge with data when he proposes that "acquired knowledge of a man" could be given to a computer by "the transfer of data from human to machine mind". Yet those two are not synonymous, the implication being that knowledge is no more that a large database of context-free atomic facts, by which definition human knowledge therefore becomes reducible to logical formalism.

Sir Clive also speculates that these intelligent computers will evolve as silicon-based life forms, able to reproduce themselves. I wish I could be generous but that seems to me to be staggeringly stupid. Again the seductive use of vocabulary with human connotations continues with use of words like "see", "feel", "sensory devices". Optical or physical devices may indeed be used to supply information to a computing device, but the significance of those as sensory devices is a matter of interpretation. The ballcock in a water tank performs a sensory function, but I do not attribute to it the phenomenon of sensation.

continued on page 84

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It may be argued, however, that if the machine appears to show intelligence we may never know the difference, the Turing test frequently being invoked. The Turing test, however, is not a test to divine the existence of intelligence, rather it is a measure of the level at which we can be fooled into believing that the responses we detect may be coming from an intelligent source.

Moral dilemmas

Suppose, however, we allow that machines can think in a way cognate with or — superior to human beings. That then raises moral dilemmas of massive proportions. If we have truly created intelligent life then presumably this life form is entitled to what we regard as fundamental human rights. With the concept of life comes the concept of death and killing. The question is by no means trivial, for Sir Clive offers those "superintelligent" life forms as "menial slaves" to human beings. In what sense could beings of such superior intelligence be treated as menial slaves?

The second offering of Sir Clive's speech is of high technology as solutions to human problems. Here he is on equally shaky ground. He is not unique in that, for it is common to propose the salvation of the world by throwing technological solutions at human problems. This is doomed to failure because the problems themselves are not technological, but human and social.

What are the major problems faced by humanity in the twentieth century? And what is the role of advanced technology in solving them? They are not difficult to identify: hunger, poverty, war, unemployment, health, freedom, education, housing. The size of the list is as distressing as its content.

None of those problems is a merely technological problem; indeed, for many of them we know what the solutions are. What we lack is the collective human willpower and trust to take decisions to implement the solutions to end these problems. The immense effort and logistic enterprise used to transport the men, machinery and materials of warfare and mass public death around the world might equally be used to feed and clothe the sick and the hungry. We have massive food production capabilities, but most of the world is hungry. It is the human application to the solution that is missing, not the solution itself.

Technological solutions show equally great poverty of inventiveness in areas of unemployment. Sir Clive at least acknowledges the unemployment problems — though not the consequential problems — created by advanced technology. He believes those are only temporary; he does not say why. He believes those will widen horizons, he does not say how. He says ". . . . goods are still needed but . . . technological change will remove virtually all employment".

Who will buy the goods? And with what? In what way will the wealth (if any) created by this new Technological Revolution be distributed among those who, unemployed, have no part in it? Who will own the means of wealth production?

Sir Clive believes rather that our lives will parallel the lives of the Freemen of Athens. But the world in the twentieth century is not a City-State, and not all the inhabitants of Athens were Freemen. Poverty and misery were not absent in Periclean Athens, nor did educating children to an appreciation of the finer things in life do anything to prevent the wars which sapped, eroded and finally reduced Periclean Athens.

Where, however, human solutions to human problems seem difficult, it is not uncommon for the problem to be simply recast as a technological problem, to which of course technological solutions abound. It is just such a technological solution which Sir Clive offers to the problem of crime. He ignores the relationship between crime and the social problems of unemployment, deprivation, poverty, poor housing; instead, the 'solution' is to implant in the 'criminal' a device linked to a computer.

He dismisses fears of an Orwellian society by saying that we could offer a choice to miscreants. This dismissal fills me with fear and alarm. It presupposes that any State given such control *would* offer an alternative, it applies a narrow definition of what people would recognize as a miscreant, it presupposes that the definition of a miscreant would not be 'adjusted' to include anyone who opposed the State in any way.

Plain silliness

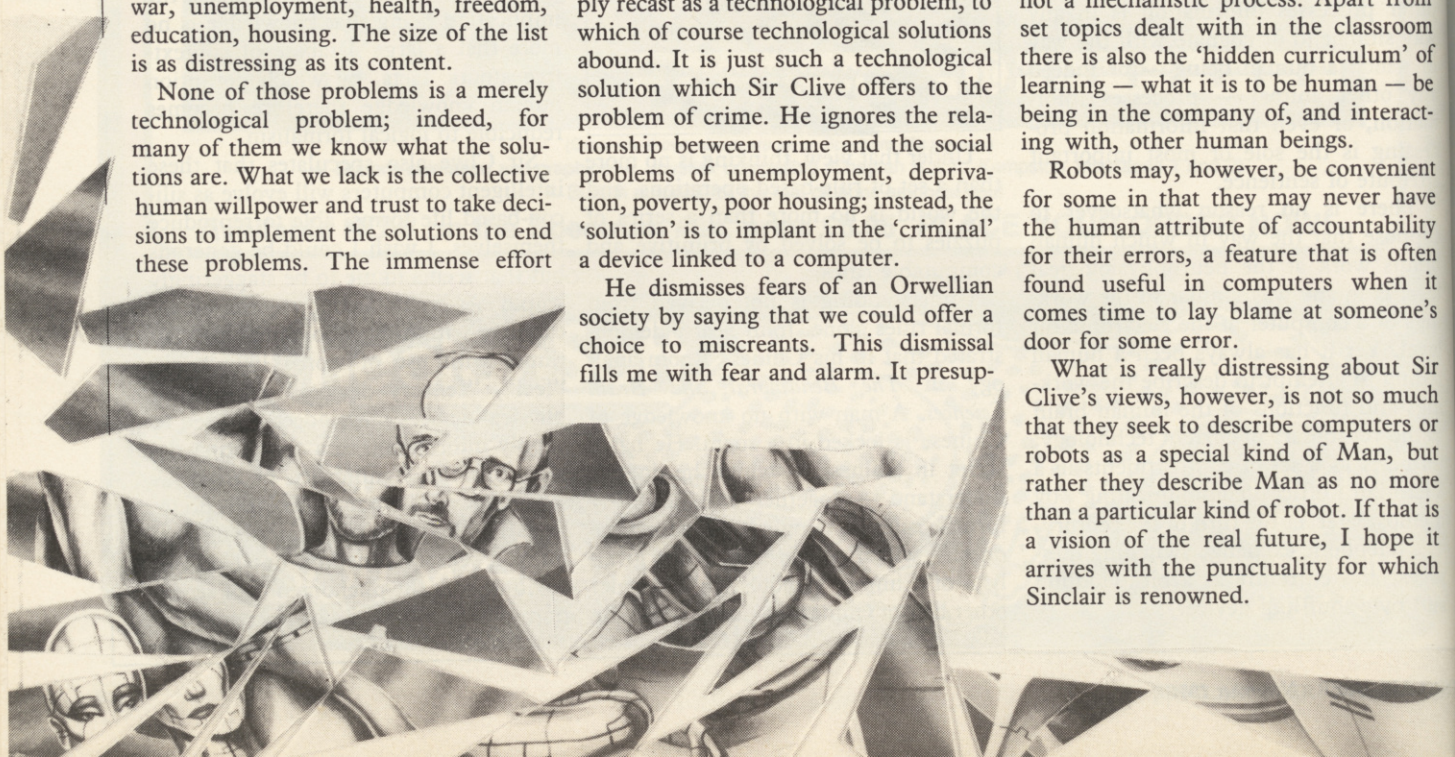
That is not mere speculation on my part: the technology of surveillance has already been widely and illegally applied in this country to people who were not criminal in any sense of the word, as exemplified in a recent case. I am not sure if what Sir Clive demonstrates is innocence, naivete or just plain silliness, but our liberty should rest on stronger foundations than unproved declarations of benevolence from the State.

Even the problems of loneliness in old age are cast by Sir Clive as technological problems for which, of course, the solution is a quickwitted robot, not humanity, caring, love, compassion, or understanding. Those are qualities which, if they have them, people have from an understanding of human problems, human ills, human sufferings — in short, by being a human being sharing in those fears and difficulties with which so much of life is fraught. It is not clear how those attributes or properties could be shared by a robot.

A more persuasive application, perhaps, is in the field of education. Sir Clive argues that we can — and presumably therefore should — have our children taught by machines. Yet here again his arguments are faulty. Education does not consist of instilling a list of facts. It is, above all, a social process, not a mechanistic process. Apart from set topics dealt with in the classroom there is also the 'hidden curriculum' of learning — what it is to be human — be being in the company of, and interacting with, other human beings.

Robots may, however, be convenient for some in that they may never have the human attribute of accountability for their errors, a feature that is often found useful in computers when it comes time to lay blame at someone's door for some error.

What is really distressing about Sir Clive's views, however, is not so much that they seek to describe computers or robots as a special kind of Man, but rather they describe Man as no more than a particular kind of robot. If that is a vision of the real future, I hope it arrives with the punctuality for which Sinclair is renowned.



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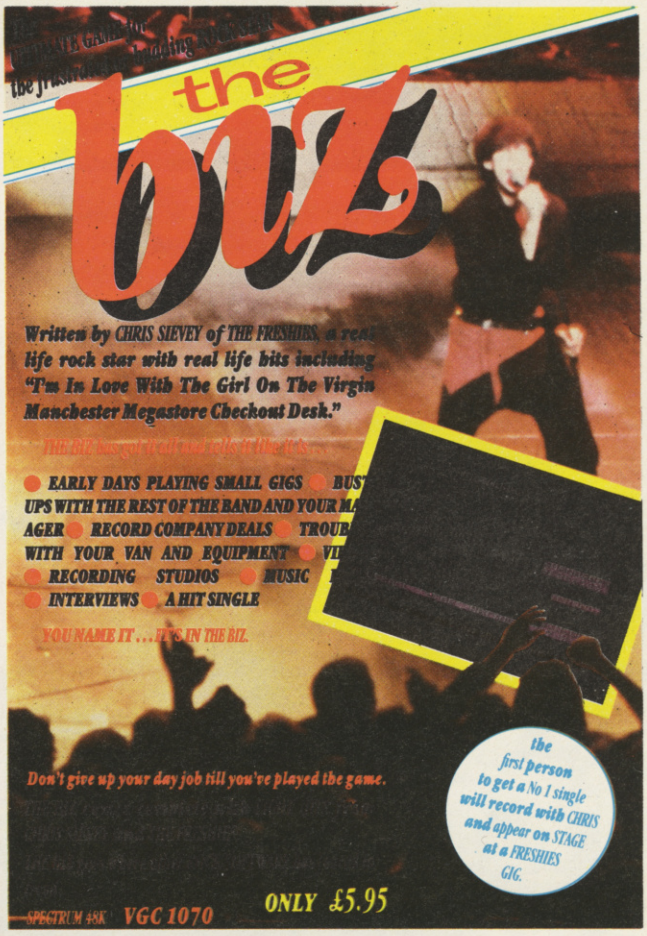
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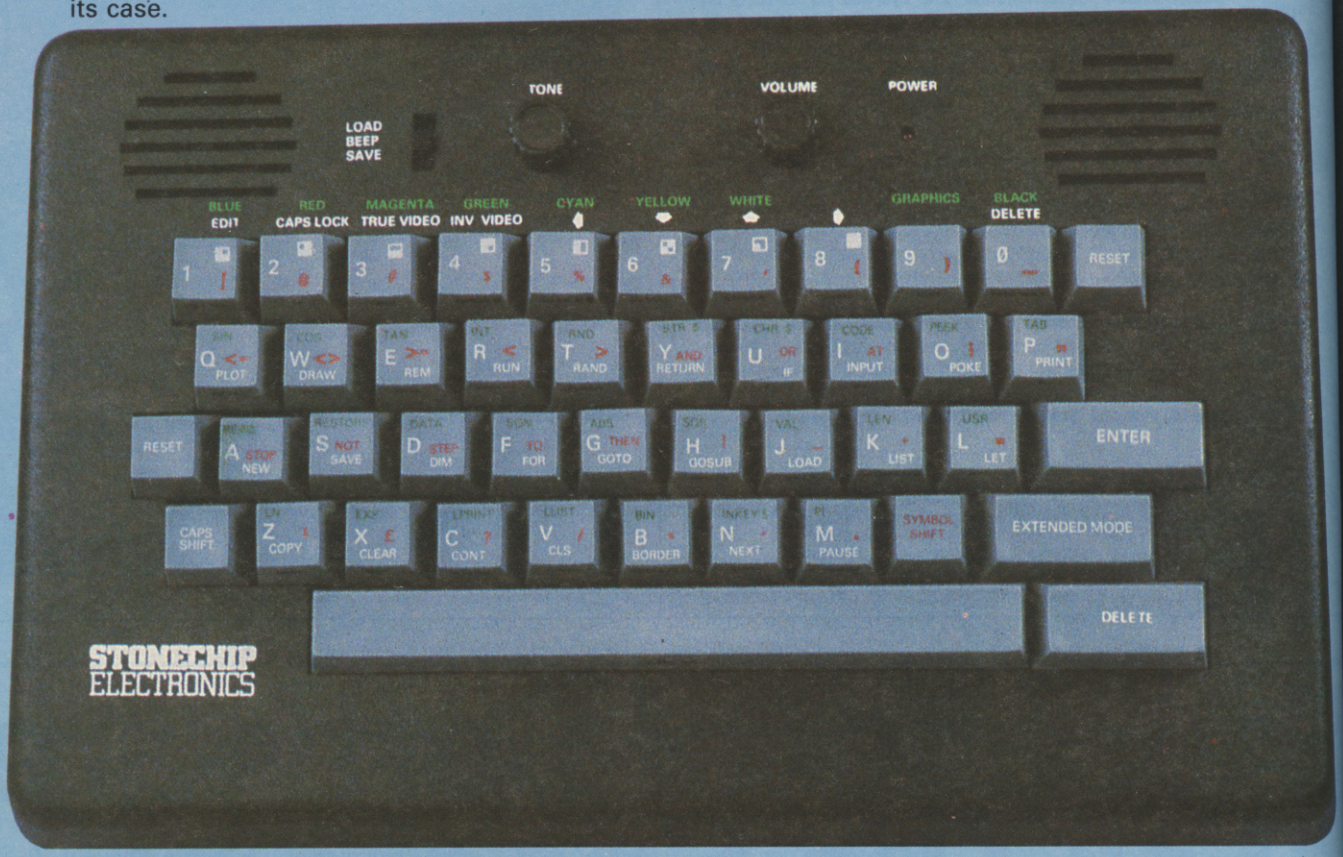

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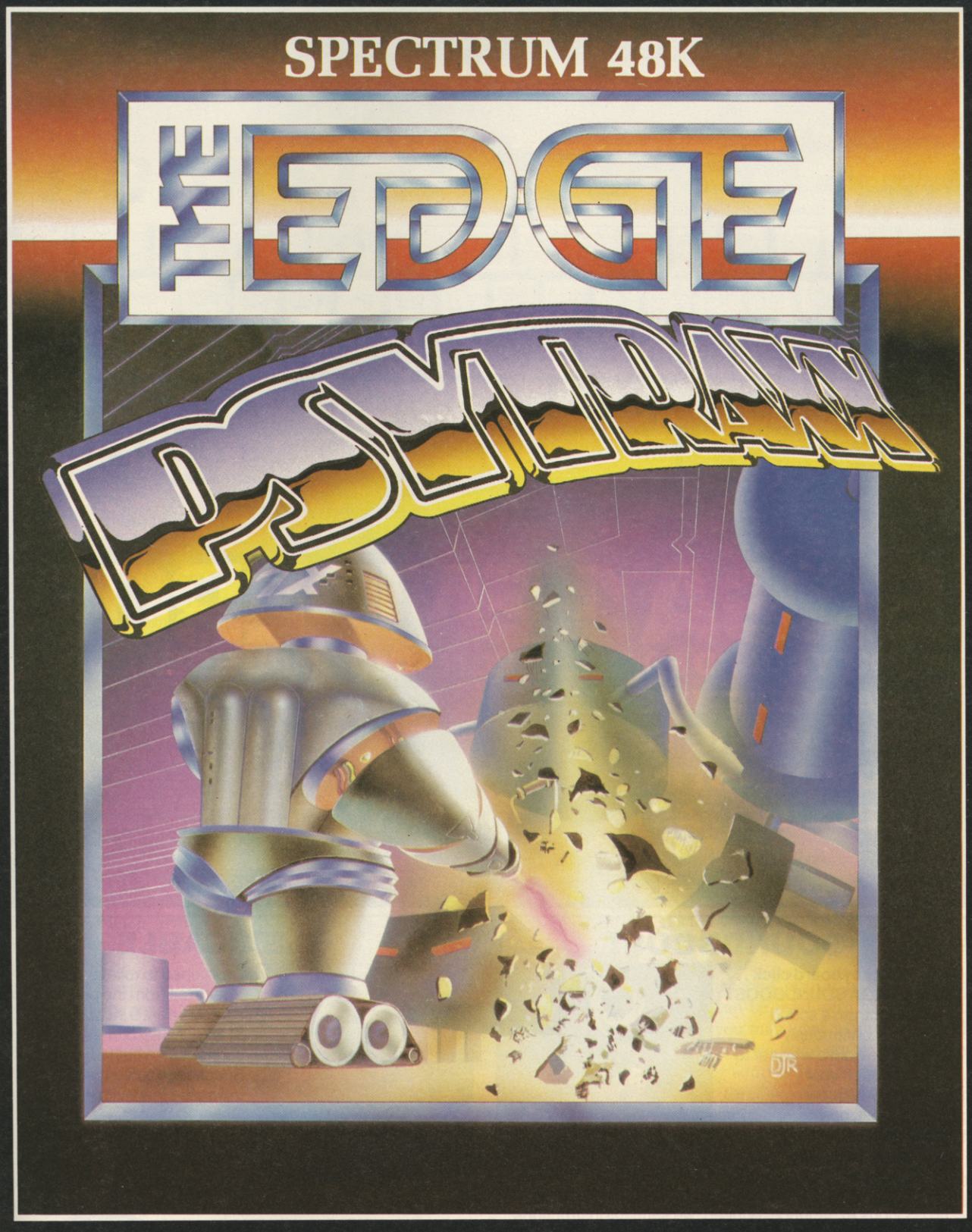
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The standard of QL software has been set by Metacomco. John Gilbert investigates

The first bytes

WHEN A NEW microcomputer, such as the QL, is launched critics and users alike expect the first few pieces of software which appear on the market to be rushed efforts, written sloppily in a high level language and containing many bugs.

Although few software packages are available for the QL the machine and its manufacturers have been extremely lucky in that what does exist is of a high quality. A case in point is the new **Assembler Development Package** from Metacomco, a company which has almost single-handedly provided an insight into what the QL can do.

The package consists of an assembler and full-screen text editor and is a result of several years of experience in 68000 programming by its principal author Dr Tim King. It uses the full 68000 instruction set and provides access to the much-vaunted multi-tasking abilities of the Sinclair machine.

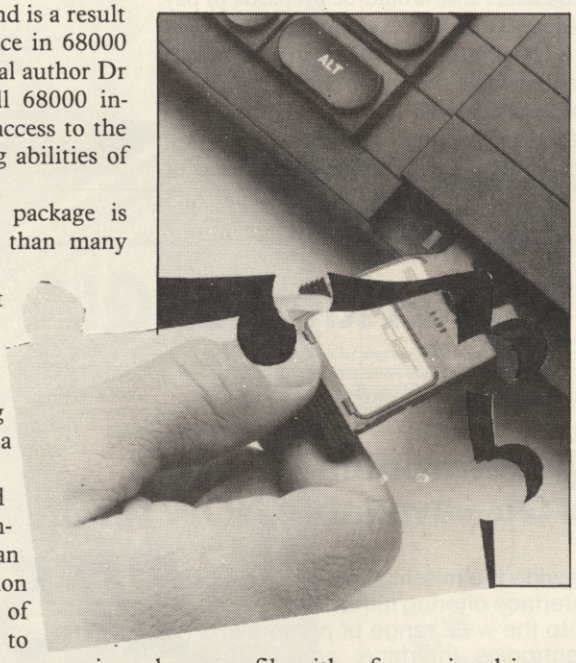
The editor part of the package is more complex and robust than many which are available on other microcomputers. It has to be because although 68000 assembler language is easy to learn it can become complex when writing applications which require a great deal of code.

It provides a user-defined window, initially at the centre of the screen, which can be changed both in position and size to suit the needs of the user. It is also possible to define other windows and run a version of the editor in each so that several files can be entered into the QL simultaneously and edited one after the other. You might, for instance first decide to do some work on the file in window one and then change some lines listed in window two. Switching between the windows is a simple matter of pressing a few keys and makes complex editing tasks much simpler than they would normally be. It is possible to squeeze 12 windows onto the screen and have 12 files in memory at the same time but the text within each is only just legible.

The editor will allow the entry of any ASCII file. So, you could type in assembly source listings, data files or even high level language programs, de-bug them and save them to microdrive. The full screen layout means that you will no longer have to cope with the simple line editor with which the basic QL has been equipped.

Innovations such as automatic word-wrapping have also been included. Word-wrapping has been the province of word processors where if a word ran off the edge of the screen the computer would put it onto the next line. It would then space out the rest of the sliced line so that it appeared as a block of text and the last character on the left- and right-hand margins were aligned vertically.

Once you have entered your assembly



language file, either from microdrive or by hand, there are a variety of options available through which you can correct errors and amend programs. When you enter a long program you will see that the user-defined window through which you can look at the text may only display part of the source program because you have changed the margin settings. In such a case the program lines can be scrolled horizontally and vertically across a specified window.

Other options include copy and delete functions which allow blocks of code to be copied into various sections of memory, exchanged for other sections of source, or deleted altogether.

Some simple de-bugging aids such as Search and Replace will also make your life easier when manipulating source code. Those will allow you to change all occurences of a string of characters within the source and then replace it with another piece of code. For instance, you might have used a block reference label several times within a program but then decide that it no longer represents the function of that block or you can think of a more apt name with which to describe it. By using Search and Replace you can remove the label and insert a new one.

The real ability of the editor lies in its ability to link or merge files of source. A file can be entered from microdrive and inserted at any point within one which is already resident in memory. That will not only prove useful when you find that an extra piece of code needs to be added to a program, but you can also start building up a library of memory-independent subroutines, which can be placed anywhere within the RAM and be used in several programs.

In order to assemble the source code it has to be saved from the editor and loaded into the assembler. The source can be loaded from a specific part of memory, made position-independent, or relocatable. In the last case a relocator routine is added to your code which can then be put into any spare section of memory by the QL. The first of those options will probably be used when only one short program is to be assembled and where it is not difficult to calculate the exact extent of any jumps that are required to other addresses with the program.

The second option is more important. It can be used with long programs which you may want to alter frequently and do not want the bother of changing memory address references.

The three-pass assembler takes approximately one minute to do its work and requires three program overlays to be loaded in from microdrive before it finishes all of them. The reason that, like some of the Psion software packages, all of the assembler does not fit into the memory at one time is that the error messages take up 10K of internal RAM. Each message is written in English and not the mumbo-jumbo that has become the industry standard and is hard to decipher unless you have the manual to hand.

If an error is found in the source listing while assembly is taking place the process is stopped and the line upon

continued on page 90

continued from page 89

which the mistake has been found is flagged by a cursor at the beginning of the statement. The error message is displayed at the bottom of the screen and a correction can be made cleanly and easily by re-editing the source.

The most powerful aspects of the assembler package are the ability to make routine requests to QDOS, thus plugging into the power of the QL operating system, and being able to create and call macro directives.

A macro is a series of commonly used instructions which can be packaged into one routine and given a label, or name. Those instructions will be executed in sequence when the name of the macro is called within a program.

A large number of ready-made assembler directives are included within the package. Those include the usual ORG and EQU instructions which ensure that a piece of code is assembled at the correct location and produce the nearest thing to Basic variables within assembly language. Other directives include conditional assembly of source code, the setting of boundary size for data areas and the formatting of the code display on any device including screen and printer.

The development package was still at the Beta test level when we looked at it. That means that it is the finalised version minus full de-bugging and the addition of routines recommended by the de-buggers.

The assembler quickly showed, however, that the QL is a very powerful machine when the restrictions of SuperBasic are lifted. The package is a sophisticated piece of software which not only uses the QDOS operating system but also allows the user to gain access to that elusive beast. It is the first assembler onto the market and will obviously not be the last.

Metacomco has no such problems with its package as the software was defined before the QL saw the light of day. Dr Tim King, had to make few changes to the specification to allow it to run on the QL as the specification of all 68000 chips is very closely linked. The company believes that it could sell the same product on an upmarket micro to clients who would be prepared to pay £400. The QL development package is to be sold for £60 which represents an astonishing switch in marketing policy that, if folowed by other companies of the same stature of Metacomco, will certainly lower the price expectations of businessmen.

Just as the price of hardware has fallen rapidly, partly due to the innovations of Sinclair Research, so the prices of sophisticated software packages will fall because companies which have established themselves at the top end of the market will see a reason to move down, reducing prices of existing products, dumping them to other machines, and taking customers with them.

A further innovation, admittedly started by WH Smith with the Advance computer but followed by Metacomco, is the introduction of such serious packages as the assembler into chain stores.

The new moves will produce a better standard of software on the shelves of high street shops and they bode well for the future of the microcomputer market if the Metacomco Assembler Development package indicates the shape of things to come.

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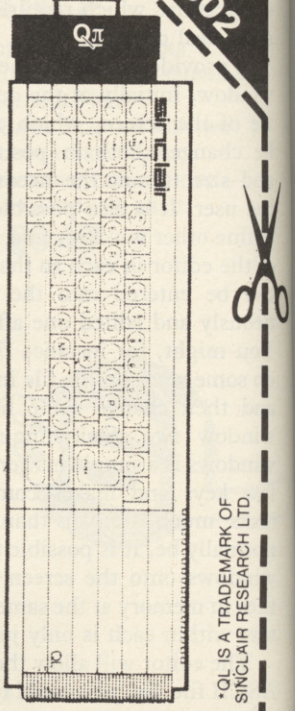

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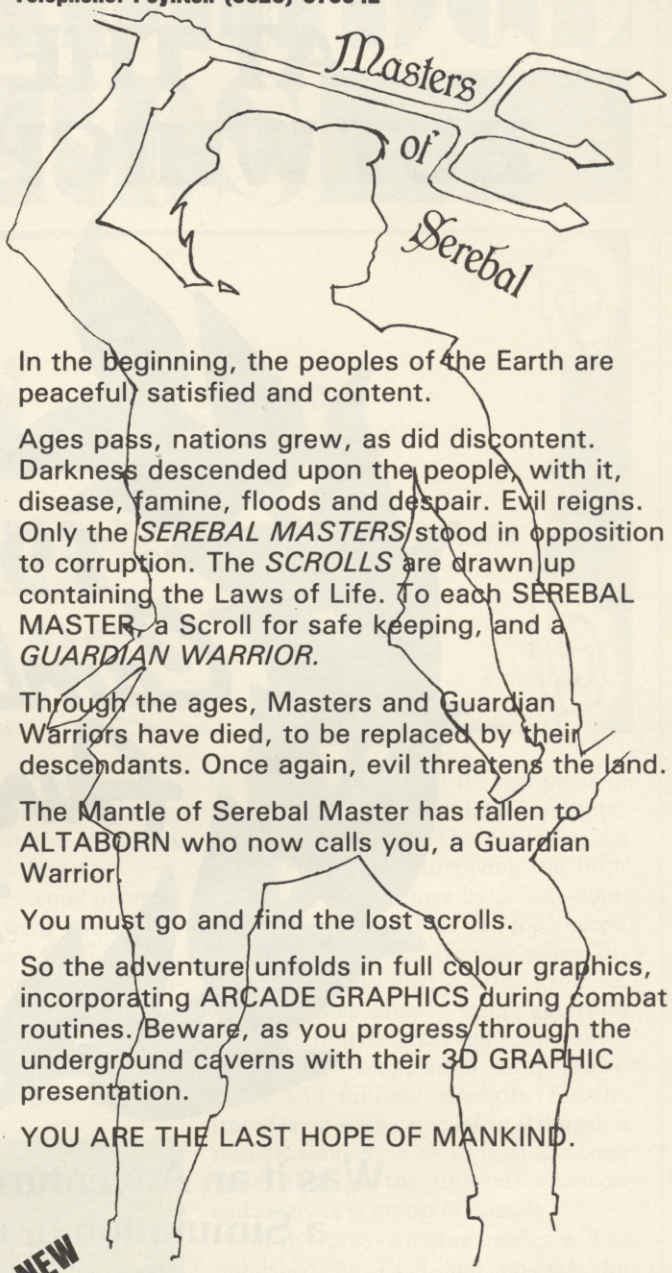

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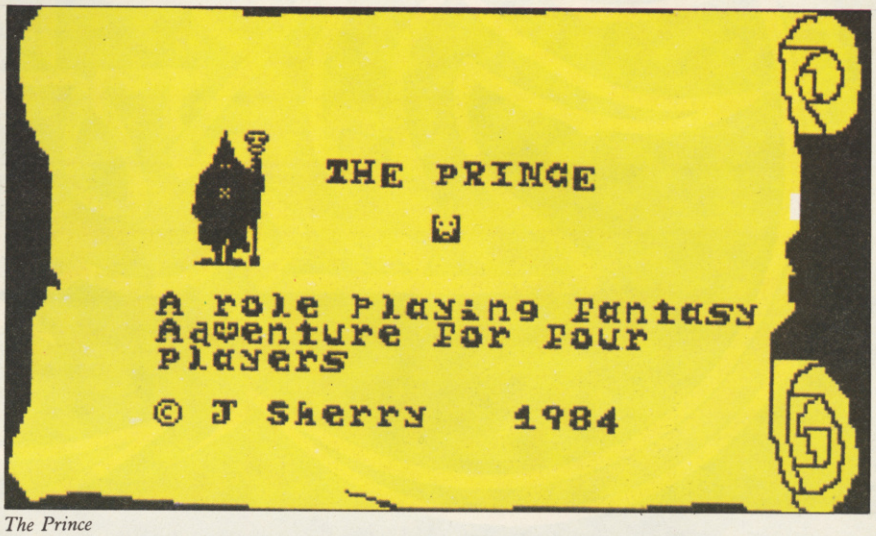
1984 CAMBRIDGE AWARDS

HISTORY was made at the Ritz Hotel on October 4 when the first multi-player interactive adventure game for the Spectrum was unveiled. Entitled **The Prince,** and written by John Sherry of Keele, Staffordshire, the game won the 1984 Cambridge Award for Programming organised by *Sinclair User* and Cases Computer Simulations. Nigel Searle, managing director of Sinclair Research, presented John Sherry with the trophy and a cheque for £2000.

The Prince is an adventure for four players, set in the walkways, courtyards, dungeons and battlements of a rambling mediaeval castle. Each player competes against the others to complete the quest and gain audience with the Prince. To help him in his task the player can hire spies and henchmen to report on, and hinder, the progress of the rival players, though frequently those servants will be double agents, in the pay of more than one player, and are not always to be trusted.

Only one player can see the screen at one time, accessing it in turn with his personal code number. Alliances can be made with the other players both on and off screen, and gradually a web of intrigue is created as all four protagonists indulge in vicious in-fighting, trapping each other in the dungeons and ambushing the henchmen.



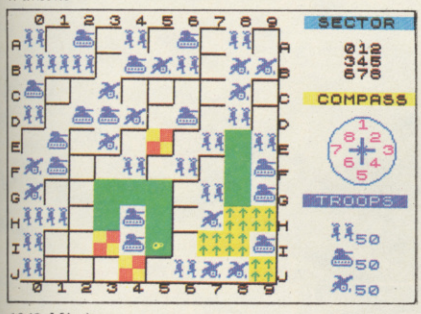
The Prince

There were also four second prizes of £250 each and those were awarded to Steven Thomas of Luton, Bedfordshire; Thomas Frost, of Argus, Scotland; Nicholas Holgate of Camberley, Surrey; and David Bark of Stranraer, Scotland.

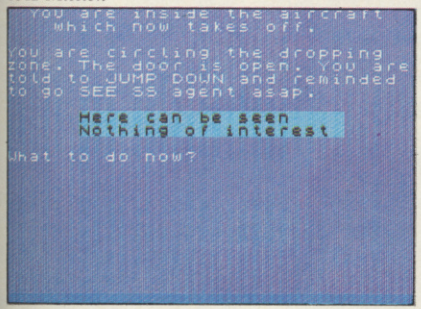
Steven Thomas submitted **War Zone,** a fast graphic wargame in which the player battles with the computer to gain supremacy of a large territory. **1942 Mission,** from Thomas Frost, is a wartime adventure involving the infiltration of enemy lines by a lone commando in search of a top secret document. Nicholas Holgate wrote **Insurgency,** a detailed strategy game set in an unstable country where guerrillas and government forces fight for control of the native population using propaganda and military strength. Finally, from David Bark came **Blue Riband,** a realistic simulation of navigating a large vessel through the tortuous channels and inlets of a group of islands.

All five prize-winning entries will be published by CCS and on sale for Christmas. The standard of the entries was consistently high and the judges found the final choice a difficult one. The runners-up, who each win five computer games from CCS are: **Columbus, Phoenix Tower, One Million Years BC, Superpower, Guadal Canal, On the Road, Air Defence, Badminton, Stock, Golden Amulet, Airways, Golden Cobra, End Game, Strategic Descent, Monopoly, D Day, Shift-Shaft, Wizard Killer, Chinese Farmer, Final Frontier, Battlestar Galactica, Shopping Trip, Spy, Sceptre of Power.**

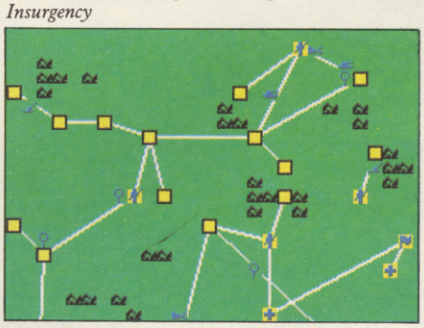
Warzone



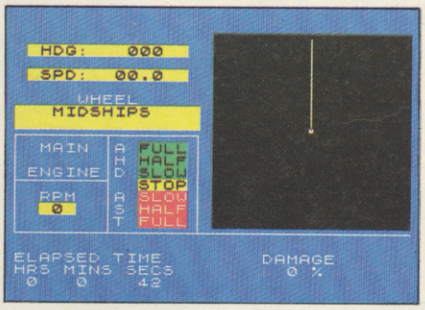
1942 Mission


You are inside the aircraft
which now takes off.
You are circling the dropping
zone. The door is open. You are
told to JUMP DOWN and reminded
to go SEE SS agent asap.
Here can be seen
Nothing of interest
What to do now?

Insurgency



Blue Riband



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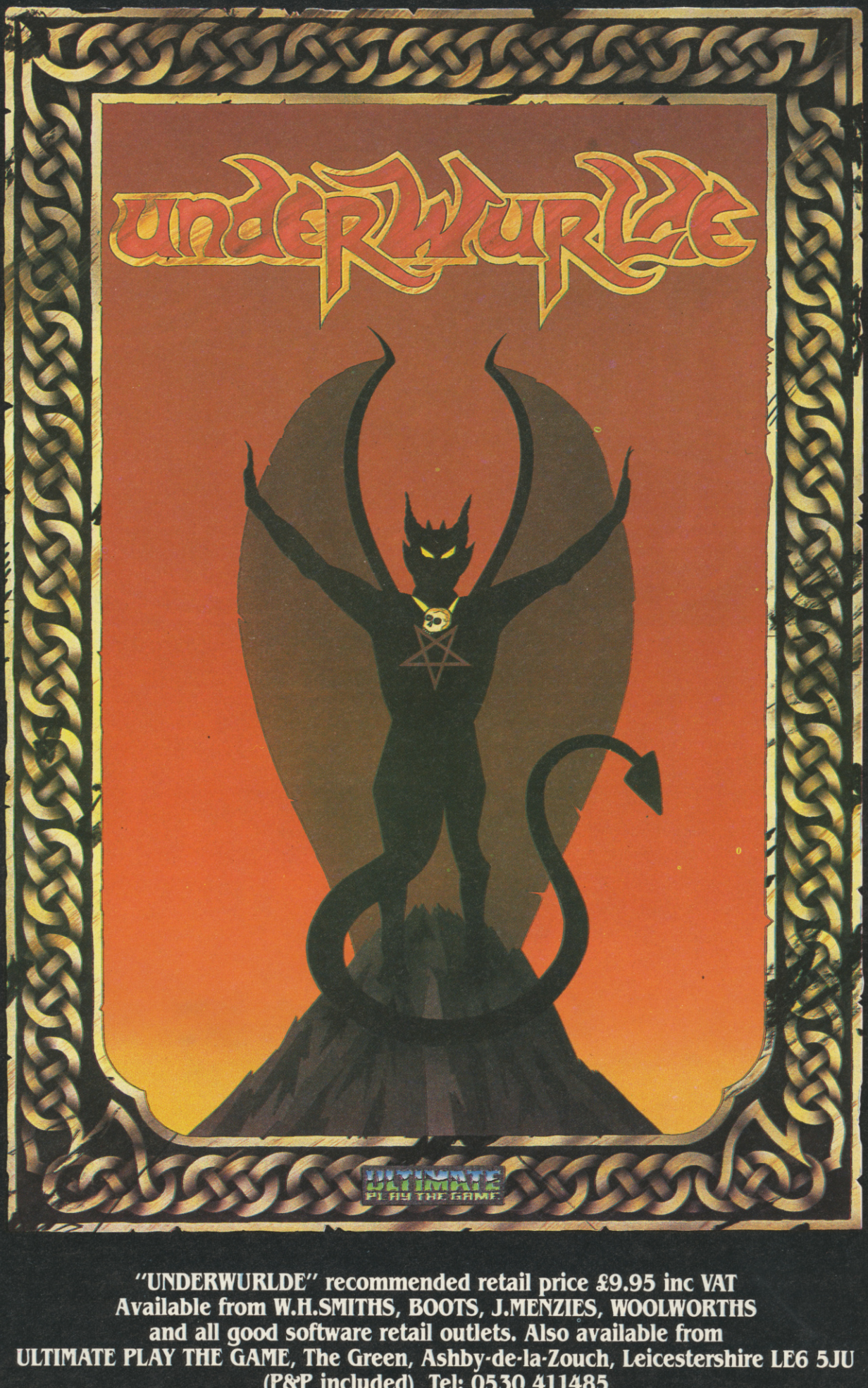

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CRUSOE *"If you are looking for something a bit beyond the conventional adventure this is one to try" (Micro Adventurer). "Uses colour, graphics and sound well, offering good value and many hours of sometimes frustrating fun. I'd recommend it" (PopCompWkly).* Load: 6 mins. STIX: none. **(Automata) £6.00**

GIANT'S REVENGE The sequel to JACK AND THE BEANSTALK (£5.95). Has the same amazing graphics and is just as difficult. These two arcade games are too difficult for some reviewers - so unless you are pretty hot stuff with a joystick, don't bother! Currah Speech adds talk. Load: 4 mins 30 secs. STIX: Kempston. **(Thor) £5.95**

MATCH POINT *"The ultimate yet in sports simulation" (Crash). "Provides some of the most spectacular graphics for the Spectrum....outclasses most other sports progams....can be described as a true simulation" (SUser).* Load: 4 mins 20 secs. STIX: Kempston, Interface 2. **(Psion) £7.95**

MONTY MOLE *"SUPERB....the graphics are of Ultimate quality and the design of the game is so clever and the problems so fiendish" (PopCompWkly).* Monty Mole goes coal snatching at his local Yorkshire pit - can he fill the bucket before the pickets get him? Can you help Monty to surface in King Arthur's castle? Some of the profits go to the Miners Welfare Fund. 21 levels. Load 3 mins 55 secs. STIX: Kempston, Interface 2. **(Gremlin) £6.95**

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FOOTBALL MANAGER *"An excellent simulation, enjoyable to anyone with the slightest interest in soccer" (PersCompNews). "Excellent use of colour and graphics... almost as exhausting as playing" (ZXComp).* Load 3 mins 24 secs. STIX: None. **(Addictive) £6.95**

FULL THROTTLE *"It's superb! The 3D is some of the best I've seen. The game itself is fun to play and is exhilarating ...91%" (Crash). "Great fun and very well done indeed...my favourite feature is the skid" (PersCompNews).* Load 2 mins 55 secs. STIX: Kempston, Interface 2, AGF, Protek. **(MicroMega) £6.95**

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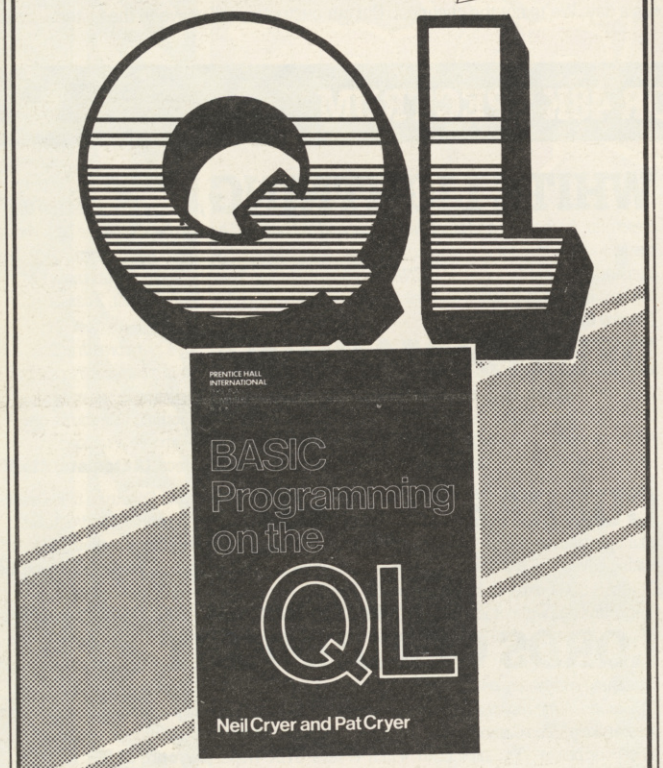

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MARS MAN

GRAPHICS INSTRUCTIONS

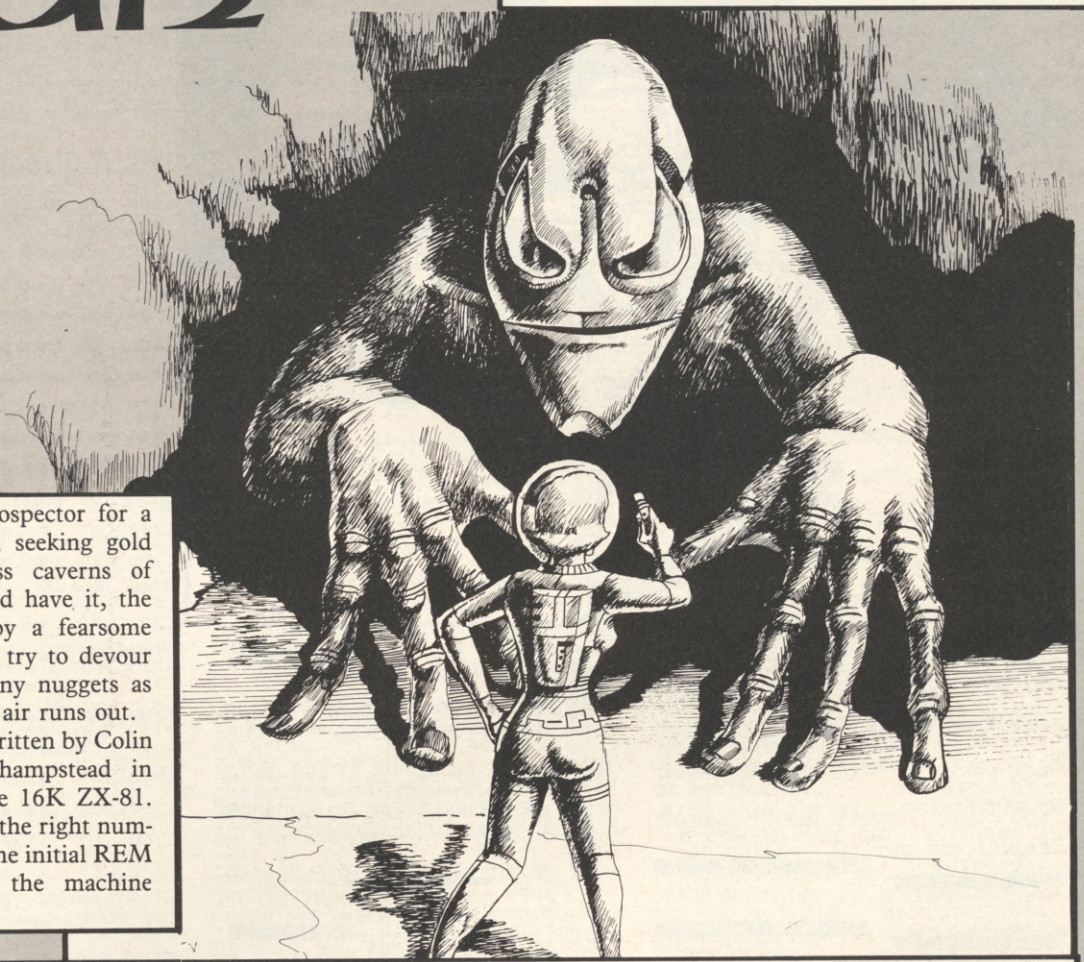
Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6*isp" means six inverse spaces and "(g4:4*i4:g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

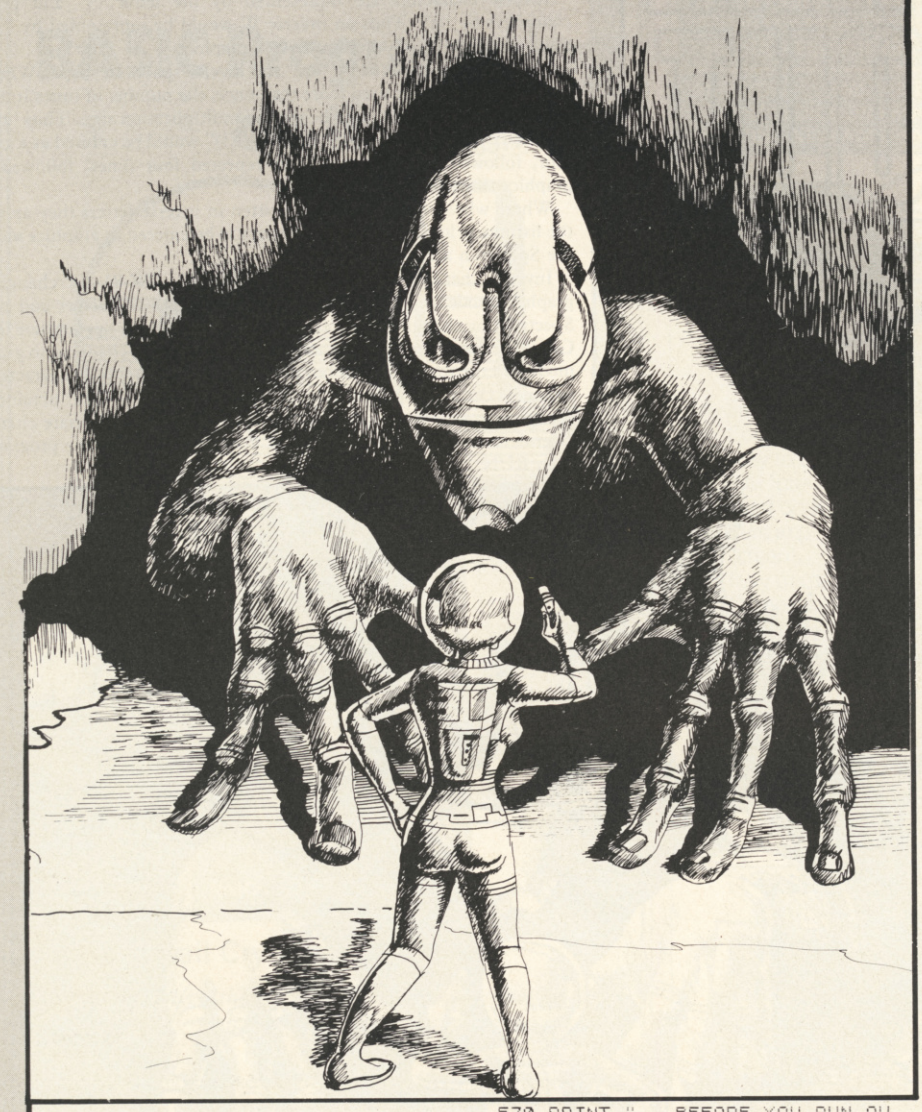
Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.



YOU are a prospector for a mining team, seeking gold in the airless caverns of Mars. As luck would have it, the caverns are ruled by a fearsome monster, which will try to devour you. Pick up as many nuggets as you can before your air runs out.

Mars Man was written by Colin Hunniford of Birkhampstead in Hertfordshire for the 16K ZX-81. Make sure you have the right number of characters in the initial REM statement to store the machine code.

```
  1 REM MMMMMMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMM          M
MMMMMMMMMMMMMMMM 240 CHARACTERS M
MMMMMMMMMMMMMMMM AT LEAST     M
MMMMMMMMMMMMMMMM              M
MMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM
MMMMMMMMMMMMMMMMMMMMMMMMM
  2 SLOW
  3 GOTO 1165
  5 CLS
 10 LET P=0
 15 POKE 16418,P
 20 FOR I=P TO 11
 30 PRINT "
"
 40 NEXT I
 45 PRINT AT 23,P;"
MARSMAN+++
" AT 1,1;"
"
 50 POKE 16418,2
 55 FOR I=1 TO 19 STEP 2
 60 LET D=INT (RND*29+1)
 70 PRINT AT I,D;"H";AT I+1,D;"
H";AT I+2,D;"H"
 80 NEXT I
 85 LET Z$=" "
 90 DIM X(4)
100 POKE 16514,212
105 LET X(1)=1
110 POKE 16515,2
115 LET X(2)=-1
120 POKE 16516,P
125 LET X(3)=33
130 POKE 16517,P
135 LET X(4)=-33
140 POKE 16518,232
145 LET A=PEEK 16396+PEEK 16397
*256+66
150 POKE 16519,3
155 LET B=64
160 POKE 16522,P
200 PRINT AT 0,0;"  SCORE ";T
AB 14;"
210 POKE A+B,CODE Z$
220 LET B=B+P
230 LET Z$=CHR$ PEEK (A+B)
240 IF Z$="," THEN LET Z$=" "
250 POKE A+B,178
260 IF Z$="*" THEN GOTO 640
270 IF USR 16529=0 THEN GOTO 31
0
280 LET P=X(INT (RND*4+1))
290 IF PEEK (A+B+P)=128 OR B+P<
0 THEN LET P=0
300 GOTO USR 16710
310 POKE 16418,0
311 PRINT AT 0,24;"0"
314 LET K$="  YOU HAVE RUN OU
T OF AIR.  "
315 FOR I=0 TO 15
320 PRINT AT 23,0;"  YOU HAVE
RUN OUT OF AIR.  "
330 PRINT AT 23,0;"  YOU HAVE
RUN OUT OF AIR.  "
340 NEXT I
345 FOR I=2 TO 22
346 PRINT AT 1,1;"
"
350 PRINT AT I,0;"
"
```



```
 355 NEXT I
 360 FOR I=22 TO 2 STEP -1
 370 PRINT AT I,0;K$+"
 "
 380 NEXT I
 400 POKE 16418,2
 410 IF USR 16729=1 THEN GOTO 50
0
 420 PRINT ,,," YOU DID NOT MANAG
E TO BEAT THE        OLD HIGH SC
ORE OF"
 430 PRINT ,,TAB 5;PEEK 16520+PE
EK 16521*256;TAB 10;" SCORED BY
";A$
 440 PRINT ,,"  PRESS ANY KEY TO
GET THE MENU."
 450 IF INKEY$="" THEN GOTO 450
 460 GOTO 1085
 500 PRINT ,,"  YOU HAVE JUST SCO
RE A NEW HIGH          ENTER YOUR
NAME",,TAB 9;"MAX:7 LETTERS"
 510 INPUT A$( TO 7)
 520 GOTO 430
 530 CLS
 540 PRINT TAB 4;"
R S "  M A
"
 550 PRINT TAB 7;"
N     M A
"
 560 PRINT "
",,TAB 9;"INSTRUCTION
S",TAB 9;"
",," YOU HA
VE BEEN TELEPORTED DOWN    FROM
YOUR SPACESHIP IN ORBIT  AROUND
MARS TO THE DEEP MARTIAN CAVES.W
HAT YOU HAVE TO DO IS TO    COL
LECT AS MANY VALUABLE    MARTIA
N GOLD NUGGETS AS YOU CAN"
 570 PRINT "    BEFORE YOU RUN OU
T OF AIR.",,TAB 10;"PRESS (N/L)"
 580 IF INKEY$<>CHR$ 118 THEN GO
TO 580
 590 CLS
 600 PRINT "  EACH NUGGET IS WOR
TH 4 POINTS AND IF YOU CAN ESCAP
E TO THE TOP  LEVEL YOU GET A BO
NUS OF 256     POINTS.JUST ONE M
ORE ITEM.    THERE IS A RATHER NA
STY MARTAIN MONSTER THAT LIVES O
N VHE UPPER    LEVELS.THIS MONSTE
R EATS THE    NUGGETS SO YOU MUST
 TRY TO GET    THEM BEFORE THE MO
NSTER DOES."
 610 PRINT ,,TAB 9;"KEYS TO PRES
S",TAB 9;"
",,TAB 11
;"5:LEFT",TAB 11;"6:DOWN",TAB 11
;"7:UP",TAB 11;"8:RIGHT"
 615 PRINT ,,TAB 10;"PRESS (N/L)"
 616 IF INKEY$<>CHR$ 118 THEN GO
TO 616
 617 CLS
 620 PRINT ,,TAB 12;"FIGERS",TAB
12;"
",,TAB 11;"*:YOU",TAB
11;"M:MONSTER",TAB 11;",:NUGGET
S",TAB 11;"#:WALL",TAB 11;"%:TOP
 LEVEL"
 630 GOTO 440
 640 POKE 16418,0
 645 FOR I=0 TO 15
 650 PRINT AT 23,0;"      YOU HA
VE BEEN CAUGHT      "
 660 PRINT AT 23,0;"      YOU HA
VE BEEN CAUGHT      "
 670 NEXT I
 680 LET K$="      YOU HAVE BEEN
 CAUGHT      "
 690 GOTO 345
 700 POKE 16520,0
 710 POKE 16521,0
 720 LET A$="NOBODY."
 730 GOTO 1085
 800 CLS
 810 PRINT AT 11,0;" PLEASE STAR
T THE TAPE RECORDER              R
ECORDING"
 830 FOR I=0 TO 15
 840 NEXT I
 845 PRINT ,,," WAIT FOR THE BLA
CK LINE TO MOVE                ON"
 845 FOR I=0 TO 15
 846 NEXT I
 850 PRINT ,,TAB 3;"AND PRESS A
KEY WHEN READY"
 855 PRINT ,,TAB 2;"(TO RELOAD L
OAD AS""MARSMAN"")"
 860 IF INKEY$="" THEN GOTO 860
 870 CLS
 880 SAVE "MARSMAN"
 890 GOTO 1085
1000 POKE 16517,PEEK 16517+1
1010 PRINT AT 0,10;(PEEK 16516+P
EEK 16517*256)
1020 POKE 16418,0
1030 FOR I=0 TO 15
1040 PRINT AT 23,0;"      YOU HAVE
ESCAPED THE CAVES      "
1050 PRINT AT 23,0;"      YOU HAVE
ESCAPED THE CAVES      "
1060 NEXT I
1070 LET K$="      YOU HAVE ESCAPED
 THE CAVES      "
1080 GOSUB 345
1085 CLS
1090 PRINT TAB 7;"
 ",TAB 7;"
",TAB
7;"
1100 PRINT TAB 7;"
"
1110 PRINT ,,TAB 7;"1:THE GAME",
,,TAB 7;"2:INSTRUCTIONS",,,TAB 7
;"3:HIGH SCORE RESET",,,TAB 7;"4
:PROG SAVE"
1115 PRINT ,," PRESS THE KEY OF
THE NUMBER OF          YOUR CHO
ICE"
1120 IF INKEY$="1" THEN GOTO 5
1130 IF INKEY$="2" THEN GOTO 530
1140 IF INKEY$="3" THEN GOTO 700
1150 IF INKEY$="4" THEN GOTO 800
1160 GOTO 1120
1165 FAST
1170 LET L$=    "80007801C6020000
"
1180 LET L$=L$+"007CB8C07DB9C9ED
"
1190 LET L$=L$+"4B86402100000CD8B
"
1200 LET L$=L$+"40281C2A0C401119
"
1210 LET L$=L$+"0019220E40ED4B86
"
1220 LET L$=L$+"400B0B000000ED43
"
1230 LET L$=L$+"8640CD980A182801
"
1240 LET L$=L$+"0000C92A0C401B19
"
1250 LET L$=L$+"18432A0C40131918
"
1260 LET L$=L$+"3C2A0C4006211310
"
1270 LET L$=L$+"FD1918312A0C4006
"
1280 LET L$=L$+"211B10FD1918262A
"
1290 LET L$=L$+"0C40ED5B8240193A
"
1300 LET L$=L$+"8A407701FEF7ED78
"
1310 LET L$=L$+"FE6F28C701FEEFED
"
1320 LET L$=L$+"78FE6F28CCFE7728
"
1330 LET L$=L$+"D3FE7B28BD7EFE80
"
1340 LET L$=L$+"282FFEB2282B328A
"
1350 LET L$=L$+"40ED5382403617FE
"
1360 LET L$=L$+"1BC0ED4B84400303
"
1370 LET L$=L$+"0303ED4384402A0C
"
1380 LET L$=L$+"40110B0019220E40
"
1390 LET L$=L$+"CD980A3E00328A40
"
1400 LET L$=L$+"C92A0C40ED5B8240
"
1410 LET L$=L$+"193617C90142002A
"
1420 LET L$=L$+"8240CD8B40380401
"
1430 LET L$=L$+"C800C901E803C9ED
"
1440 LET L$=L$+"4B84402A8640CD8B
"
1450 LET L$=L$+"403804010000C9ED
"
1460 LET L$=L$+"43884001010C9"
1465 LET TOT=0
1470 FOR I=0 TO 238
1480 LET A=((CODE (L$(I*2+1))-28
)*16+CODE L$(I*2+2)-28)
1490 POKE 16514+I,A
1495 LET TOT=TOT+A
1500 NEXT I
1505 SLOW
1510 IF TOT=20521 THEN GOTO 700
1520 PRINT "SORRY.  THERE IS A M
ISTAKE IN","LINES 1170 TO 1460.
 PLEASE","CHECK YOUR LISTINGS."
```